



Standard Practice for Obtaining Bispectral Photometric Data for Evaluation of Fluorescent Color¹

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INTRODUCTION

The fundamental procedure for evaluating the color of a fluorescent specimen is to obtain bispectral photometric data for specified irradiating and viewing geometries, and from these data to compute tristimulus values based on a CIE (International Commission on Illumination) standard observer and a CIE standard illuminant. The considerations involved and the procedures used to obtain precise bispectral photometric data are contained in this practice. Values and procedures for computing CIE tristimulus values from bispectral photometric data are contained in Practice E2152. General considerations regarding the selection of appropriate irradiating and viewing geometries are contained in Guide E179; further specific considerations applicable to fluorescent specimens are contained in this practice.

1. Scope

1.1 This practice addresses the instrumental measurement requirements, calibration procedures, and material standards needed for obtaining precise bispectral photometric data for computing the colors of fluorescent specimens.

1.2 This practice lists the parameters that must be specified when bispectral photometric measurements are required in specific methods, practices, or specifications.

1.3 This practice applies specifically to bispectrometers, which produce photometrically quantitative bispectral data as output, useful for the characterization of appearance, as opposed to spectrofluorimeters, which produce instrument-dependent bispectral photometric data as output, useful for the purpose of chemical analysis.

1.4 The scope of this practice is limited to the discussion of object-color measurement under reflection geometries; it does not include provisions for the analogous characterization of specimens under transmission geometries.

1.5 *This standard may involve hazardous materials, operations, and equipment. 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:²

E179 Guide for Selection of Geometric Conditions for Measurement of Reflection and Transmission Properties of Materials

E284 Terminology of Appearance

E925 Practice for Monitoring the Calibration of Ultraviolet-Visible Spectrophotometers whose Spectral Bandwidth does not Exceed 2 nm

E958 Practice for Measuring Practical Spectral Bandwidth of Ultraviolet-Visible Spectrophotometers

E1164 Practice for Obtaining Spectrometric Data for Object-Color Evaluation

E1341 Practice for Obtaining Spectroradiometric Data from Radiant Sources for Colorimetry

E2152 Practice for Computing the Colors of Fluorescent Objects from Bispectral Photometric Data

2.2 NPL Publications:

NPL Report MOM 12 Problems of spectrofluorimetric standards for reflection and colorimetric use³

¹ This practice is under the jurisdiction of ASTM Committee E12 on Color and Appearance and is the direct responsibility of Subcommittee E12.05 on Fluorescence.

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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 National Physical Laboratory, Queens Road, Teddington, Middlesex, United Kingdom TW11 0LW, <http://www.npl.co.uk/>.