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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 44268.2-2024

**Microscopes - Definition and measurement of illumination
properties - Part 2: Colour-related illumination properties in
brightfield microscopes**

显微镜 照明特性的定义和测量 第2部分：明场显微镜中与颜色有关的照明特性

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part

1. Structure and drafting rules for standardization documents" Drafting is required. This document is part 2 of GB/T 44268 "Definition and measurement of microscope illumination characteristics". GB/T 44268 has been published. The following parts. Part

1 Scope

GB/T 44268.2-2024 is the second part of the Chinese standard on the illumination properties of microscopes and it covers the colour-related properties in brightfield microscopy. Colour in a microscope image is a measurement in its own right wherever a stain is read: the hue and saturation of a histological section, the colour of a mineral in thin section, the tint of a corroded surface. All of those shift with the spectrum of the illumination,

so an instrument whose lamp, filters and camera differ from another's will report a different colour for the same specimen, and that matters when the reading is used for diagnosis or for classification. The standard defines the colour-related quantities, among them the correlated colour temperature and the spectral characteristics of the illumination and the colour rendering, states how each is measured, the instrumentation and its calibration, the setting of the microscope, the calculation and expression of the results, and the reporting. For a microscope maker or a laboratory validating a digital pathology or imaging system in China, this is the reference method.

This document specifies the measurement procedure for color properties in brightfield microscopy using transmitted light illumination, either at the image plane or at the intermediate image plane. This document also specifies how relevant information is provided to users.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies. in this document.

ISO 116641.2019 Colorimetry-Part 1: CIE standard colorimetry observer and colorimetric observers) ISO 11664

3 Terms and definitions

There are no terms or definitions that require definition in this document. ISO and IEC maintain terminology databases at the following addresses.

4 Measurement parameters

4.1 General Since various light sources (such as halogen lamps, tungsten lamps, LEDs, and OLEDs) are applied to brightfield microscopy, the color characteristics caused by the light sources The differences are critical, both for different types of instruments and applications.

4.2 Spectrum The spectral radiant flux (W) should be measured by placing an instrument equipped with an integrating sphere and a spectrometer in the image plane or intermediate image plane. The measurement should be carried out in the measurement spectral range of 380 nm to 780 nm with an interval of no more than 5 nm.

4.3 Chroma The chromaticity coordinates (x, y) shall be calculated in XYZ color space (CIE 1931 color space) using the CIE 1931 2°

color matching functions. Tristimulus values, calculated from measured spectral properties. The calculation of the tristimulus values X, Y and Z should be carried out according to ISO 116641 and ISO 116643, using formulas (1) to (3).

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