INTERNATIONAL STANDARD

ISO 19056-2

First edition
2019-11

Microscopes — Definition and measurement of illumination properties —

Part 2: Illumination properties related to the colour in bright field microscopy

Microscopes — Définition et mesurage des propriétés d'éclairage —

Partie 2: Propriétés d'illumination liées à la couleur en microscopie à champ lumineux

Reference number
ISO 19056-2:2019(E)

© ISO 2019



COPYRIGHT PROTECTED DOCUMENT

© ISO 2019

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword ... **iv**

1 Scope ... **1**

2 Normative references ... **1**

3 Terms and definitions ... **1**

4 Measurands ... **1**
4.1 General ... 1
4.2 Spectral measurement ... 1
4.3 Chromaticity ... 2
4.4 Correlated colour temperature, T_{cp} ... 3
4.4.1 General ... 3
4.4.2 Correlated colour temperature using the CIE 1960 UCS chromaticity diagram and its procedure ... 3
4.4.3 Correlated colour temperature using (***x, y***) chromaticity coordinates ... 3

5 Measurement procedures ... **3**
5.1 General ... 3
5.2 Measurement environment ... 4
5.3 Integrating sphere ... 4
5.4 Microscope settings ... 4
5.4.1 Diaphragm settings ... 4
5.4.2 Adjustment of samples and focusing for diaphragms ... 4
5.4.3 Other combinations ... 4
5.4.4 Adjustment of light source ... 4
5.5 Stability of measurement ... 4

6 Information provided to the user ... **5**
6.1 General ... 5
6.2 Information of chromaticity and correlated colour temperature ... 5
6.3 Additional information ... 6

Bibliography ... **8**

© ISO 2019 – All rights reserved

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 172, *Optics and photonics*, Subcommittee SC 5, *Microscopes and endoscopes*.

A list of all parts in the ISO 19056 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

© ISO 2019 – All rights reserved

Microscopes — Definition and measurement of illumination properties —

Part 2: Illumination properties related to the colour in bright field microscopy

1 Scope

This document specifies measurands and measurement procedures of colour properties for bright field microscopy with transmitted light illumination. These measurements are defined in image planes or intermediate image planes.

This document also specifies how the information is provided to the user.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 11664-1:2019, *Colorimetry — Part 1: CIE standard colorimetric observers*

ISO 11664-3, *Colorimetry — Part 3: CIE tristimulus values*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at http://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

4 Measurands

4.1 General

Since various light sources such as halogen lamps, tungsten lamps, LEDs, and OLEDs are used for bright field microscopy, it is essential to understand the difference in colour properties due to the light sources. This applies for different applications and various types of instruments.

4.2 Spectral measurement

The spectral radiant flux (W) shall be measured by placing an instrument equipped with an integrating sphere and an optical spectrometer function in an image plane or in an intermediate image plane. The measurements shall be performed in the measurement spectral range from 380 nm to 780 nm with 5 nm intervals or less.

© ISO 2019 – All rights reserved