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Microscopes — Designation of microscope objectives —

Part 3: Spectral transmittance

Microscopes — Désignation des objectifs de microscope —

Partie 3: Facteur de transmission spectrale

Reference number
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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).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: Foreword — Supplementary information.

The committee responsible for this document is ISO/TC 172, *Optics and photonics*, Subcommittee SC 5, *Microscopes and endoscopes*.

ISO 19012 consists of the following parts, under the general title *Microscopes — Designation of microscope objectives*:

— *Part 1: Flatness of field/Plan*

— *Part 2: Chromatic correction*

— *Part 3: Spectral transmittance*

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Introduction

The spectral transmittance of microscope objectives is an important parameter that allows users to choose the appropriate product for a given application. Certain elements of glass material, cements, coatings, and optical design will have an effect on the spectral transmittance characteristics of microscope objectives. For example, one can choose to emphasize broad ranges of wavelengths or peak transmission in narrow bands or trade-off aberrations vs wavelength range. Therefore, the design of the lens set determines its spectral transmittance. A standard way to represent the spectral transmittance as a result of its design criteria was developed to address this important requirement.

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Microscopes — Designation of microscope objectives —

Part 3:
Spectral transmittance

1 Scope

This part of ISO 19012 specifies the relation of spectral characteristics between optical design and the description to microscope users for the spectral transmittance of objectives, as the guideline.

NOTE This part of ISO 19012 does not apply to objectives exclusively used on stereomicroscopes.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 10934-1, *Optics and optical instruments — Vocabulary for microscopy — Part 1: Light microscopy*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 10934-1 and the following apply.

3.1
OSTD
objective spectral transmittance by design
spectral transmittance calculated under the following conditions:

a) on-axis light path;

b) internal absorption of transparent materials according to specifications by the materials manufacturer is included;

c) reflectance of thin film coatings on optical surfaces according to their nominal value is included;

d) internal absorption and surface reflectance of immersion media and specimen covering is neglected

Note 1 to entry: OSTD is usually expressed as a percentage.

4 Requirements

4.1 General

Transmittance data for microscope objectives given in catalogues, instruction manuals, websites, or other sources shall be labelled as OSTD.

When OSTD is used in the designation of microscope objectives according to this part of ISO 19012, then it shall be made in either of two ways described in 4.2 and 4.3.

4.2 Spectral transmittance table or diagram

See Figure 1 for an example of an appropriate transmittance diagram.

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