
Microscopes — Cover glasses —

Part 1:

**Dimensional tolerances, thickness and
optical properties**

Microscopes — Lamelles couvre-objet —

Partie 1: Tolérances dimensionnelles, épaisseur et propriétés optiques



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Foreword

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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 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 the following URL: www.iso.org/iso/foreword.html.

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

This third edition cancels and replaces the second edition (ISO 8255-1:2011), of which it constitutes a minor revision to correct the designation of cover glass.

A list of all parts in the ISO 8255 series can be found on the ISO website.

Introduction

This document defines dimensions and specifies optical quality requirements in order to guarantee the quality of observation.

The data given in this document are applicable to most products in use and have been adapted to take into account the relevant national standards in vigour.

This document contains requirements for dimensional tolerances, thickness and optical properties, whereas quality requirements and test methods related to the material are dealt with in ISO 8255-2.

Microscopes — Cover glasses —

Part 1:

Dimensional tolerances, thickness and optical properties

1 Scope

This document specifies requirements for dimensional tolerances, thickness and optical properties for microscope cover glasses used for transmitted light microscopy in the visible spectral range (400 nm to 760 nm).

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 8036, *Microscopes — Immersion liquids for light microscopy*

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:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

4 Requirements

4.1 General

All media that are located between the specimen and the microscope objective are in their optical effect part of the objective. Such media are usually cover glasses and immersion media. Immersion media are defined in ISO 8036; their refractive index shall be taken into account for the selection of the cover glass.

Microscope objectives, unless equipped with correction collars, are designed for a specific immersion medium (e.g. air, oil or water) and cover glass thickness. The design thickness is $t = 0,17$ mm, unless otherwise marked on the objective.

When using microscope objectives with high numerical aperture, deviations from the nominal cover glass thickness leads to severe optical aberrations, mainly spherical aberration.

The refractive index of the cover glass material needs to be specified for a broad spectral range to maintain good chromatic correction. This is achieved by specification of the refractive index, n_e , for a reference wavelength ($\lambda_e = 546,07$ nm) near the maximum of the eye's spectral sensitivity and the corresponding Abbe number, v_e .

4.2 Dimensional tolerances for thickness

The thickness tolerances of cover glasses shall be in accordance with [Table 1](#).