
Microscopes — Cover glasses —
Part 2:
Quality of materials, standards of
finish and mode of packaging

Microscopes — Lamelles couvre-objet —

Partie 2: Qualité des matériaux, normes de finition et mode d'emballage
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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. 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. 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.

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

This second edition cancels and replaces the first edition (ISO 8255-2:1997), of which it constitutes a minor revision.

ISO 8255 consists of the following parts, under the general title *Microscopes — Cover glasses*:

- Part 1: Dimensional tolerances, thickness and optical properties
- Part 2: Quality of materials, standards of finish and mode of packaging

Introduction

The data given in this part of ISO 8255 are intended to provide for adequate performance of the product for the end user. They are applicable to most products in use and have been adapted to take into account the relevant national standards in force. Dimensions and optical qualities are specified in ISO 8255-1.

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Microscopes — Cover glasses —

Part 2:

Quality of materials, standards of finish and mode of packaging

1 Scope

This part of ISO 8255 specifies requirements and methods of test for the quality of material, standards of finish, and mode of packaging for microscope cover glasses.

This part of ISO 8255 is applicable to microscope cover glasses for use in transmitted light microscopy (400 nm to 760 nm).

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 2859-1:1999, *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

ISO 8255-1:2011, *Dimensional tolerances, thickness, and optical properties*
<https://standards.iteh.ai/catalog/standards/sist/526c3509-4a08-46ef-b211-6e292935bec/iso-8255-2-2013>

ISO 11455:1995, *Raw optical glass — Determination of birefringence*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

seed

small bubbles in glass, sometimes elongated

3.2

cord

vitreous compositional inhomogeneities in glass (also known as striae, ream, or glassy knots)

3.3

line

fine parallel line on glass surface in direction of draw

3.4

nick

place where minute piece(s) of glass have been removed from edges of glass, giving rise to poor edge finish

3.5

cleanliness

freedom from visible contamination such as fingerprints, particulate matter, or residue left from cleaning process

3.6
cloudiness
haze

light scattering or reduced transparency due to surface deterioration typically as a result of atmospheric attack in the presence of humidity and CO₂

3.7
abrasion

surface damage and pitting typically caused by vibration of one slide surface on another during packaging or during shipment and handling

3.8
acceptance quality limit
AQL

quality level that is the worst tolerable process average when a continuing series of lots is submitted for acceptance sampling

Note 1 to entry: This concept only applies when a sampling scheme with rules for switching and discontinuation, such as in ISO 2859-1 and in ISO 3951, is used.

Note 2 to entry: Although individual lots with quality as bad as the acceptance quality limit may be accepted with fairly high probability, the designation of an acceptance quality limit does not suggest that this is a desirable quality level. Sampling schemes found in International Standards such as this part of ISO 2859, with their rules for switching and for discontinuation of sampling inspection, are designed to encourage suppliers to have process averages consistently better than the AQL. Otherwise, there is a high risk that the inspection severity will be switched to tightened inspection under which the criteria for lot acceptance become more demanding. Once on tightened inspection, unless action is taken to improve the process, it is very likely that the rule requiring discontinuation of sampling inspection pending such improvement will be invoked.

[SOURCE: ISO 2859-1:1999, definition 3.1.26]

3.9
thickness variation

difference between the largest and smallest of thickness measurements, within a cover glass

3.10
vision 1,0
standard visual acuity

ability to see an object so small that the angle subtended at the eye is only one minute of arc (1/60 of a degree)

Note 1 to entry: At 0,6 m the size of a test object is about 1,75 mm.

Note 2 to entry: Since slight colour variation is permitted, definition of colour vision quality of the observer is not critical.

4 Requirements

4.1 Transparency and colour

The cover glass shall be transparent and colourless when observed as specified in [6.6](#).

4.2 Non-flatness (waviness) and non-parallelism

4.2.1 Non-flatness (waviness)

The cover glass shall be sufficiently free of waviness to pass the test as specified in [6.8.1](#).

4.2.2 Non-parallelism

Thickness variation within a single cover glass with maximum length dimension of 60 mm shall be no more than half the total thickness tolerance in ISO 8255-1, when tested according to [6.8.2](#). Of the sample of 100 cover glasses, accept a maximum of five that do not meet this requirement.

4.3 Durability

Glass shall have a surface of sufficient chemical durability and resistance to atmospheric attack to pass the solubility test specified in [6.9](#).

4.4 Surface quality and inclusions

Glass shall be visibly free of pits, seeds, cords, stones, lines, abrasions, scratches, or cracks when observed as specified in [6.5](#) (AQL 1,5).

4.5 Edge finish

The cover glass shall have no chipped corners or nicked edges exceeding 1 mm in length and 0,5 mm in depth (AQL 1,0) when examined as specified in [6.7](#).

4.6 Cleanliness and cloudiness

Cover glasses shall be clean and free of cloudiness, fingerprints, or particulate matter on its surface when observed as specified in [6.4](#) (AQL 1,5).

4.7 Adhesion

Cover glass shall be free from adhesion when tested as specified in [6.3](#) (AQL 1,5).

4.8 Residual stress/birefringence

Cover glass designated for use with polarized light shall not exhibit an optical path difference greater than 5 nm when measured through principal plane of the cover glass as specified in [6.10](#) (Inspection level S-2. AQL 1,0).

5 Sampling

5.1 General

The information in [5.2](#) may be sufficient to ensure compliance if the manufacturers certificate of conformance with ISO 9001 has been accepted by the purchaser or user. If product is to be marked “conforms with ISO 8255-2”, testing shall be as stated in [Clause 6](#) with samples drawn as specified in [5.3](#).

5.2 Quality measurement for cover glasses for conformance with this part of ISO 8255

The sampling methods, inspection levels, and AQLs in this part of ISO 8255 are required for finished lot inspection. If a producer has a “Quality system”, as specified in ISO 9001, and this system meets the quality expectations of the purchaser or user, the suppliers certificate of conformance may be acceptable to the purchaser or user. Manufacturers carry out in-process inspection to ensure compliance. Cloudiness and cleanliness might be worth evaluating with inspection levels and AQL on a lot-by-lot basis. In-process, inspection may be used by the manufacturer to ensure compliance with other criteria to qualify lots for certification.