

Optics and optical instruments - Test lenses for calibration of focimeters - Part 1: Reference lenses for focimeters used for measuring spectacle lenses (ISO 9342-1:2023)

## EESTI STANDARDI EESSÕNA

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See Eesti standard EVS-EN ISO 9342-1:2023 sisaldab Euroopa standardi EN ISO 9342-1:2023 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 9342-1:2023 consists of the English text of the European standard EN ISO 9342-1:2023.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
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EUROPEAN STANDARD

EN ISO 9342-1

NORME EUROPÉENNE

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## Optics and optical instruments - Test lenses for calibration of focimeters - Part 1: Reference lenses for focimeters used for measuring spectacle lenses (ISO 9342-1:2023)

Optique et instruments d'optique - Verres étalons pour l'étalonnage des frontofocimètres - Partie 1: Verres de référence pour frontofocimètres pour le mesurage des verres de lunettes (ISO 9342-1:2023)

Optik und optische Instrumente - Prüfgläser zur Kalibrierung von Scheitelbrechwert-Messgeräten - Teil 1: Referenzgläser für Scheitelbrechwert-Messgeräte für die Messung von Brillengläsern (ISO 9342-1:2023)

This European Standard was approved by CEN on 7 July 2023.

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COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

## European foreword

This document (EN ISO 9342-1:2023) has been prepared by Technical Committee ISO/TC 172 "Optics and photonics" in collaboration with Technical Committee CEN/TC 170 "Ophthalmic optics" the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2024, and conflicting national standards shall be withdrawn at the latest by January 2024.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 9342-1:2005.

Any feedback and questions on this document should be directed to the users' national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

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## Endorsement notice

The text of ISO 9342-1:2023 has been approved by CEN as EN ISO 9342-1:2023 without any modification.

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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 document 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](http://www.iso.org/directives)).

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This document was prepared by Technical Committee ISO/TC 172, *Optics and photonics*, Subcommittee SC 7, *Ophthalmic optics and instruments*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 170, *Ophthalmic optics*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 9342-1:2005), which has been technically revised.

The main changes are as follows:

- use of the term "reference lens" to denote these high precision test lenses;
- use of the term "verified power" instead of "conventional power";
- the addition of the spherocylindrical-power reference lens and, with some modification to tolerances, reference filters that were added to ISO 8598-1 during its last revision;
- the optional addition of low power spherical reference lenses;
- editorial revision and clarification of [Annex A](#) on the design of reference spherical lenses
- the addition of annexes on the design and validation of prismatic reference lenses and the validation of the cylindrical reference lens.

A list of all parts in the ISO 9342 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](http://www.iso.org/members.html).

# Optics and optical instruments — Test lenses for calibration of focimeters —

## Part 1: Reference lenses for focimeters used for measuring spectacle lenses

### 1 Scope

This document specifies requirements for reference lenses for the calibration and verification of focimeters that are used for the measurement of spectacle form lenses, e.g. those complying with ISO 8598-1. It also gives a method for the determination of the back vertex power of the reference lenses.

**NOTE** It is accepted that other reference lenses can also be used with powers within the given range, manufactured to the same standard of accuracy and form, but different back vertex powers. However, only lenses with integer nominal powers, as described in 4.1, can be used for the calibration of digitally-rounding focimeters.

### 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 7944, *Optics and optical instruments — Reference wavelengths*

ISO 13666, *Ophthalmic optics — Spectacle lenses — Vocabulary*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 13666 and the following apply.

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

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

#### 3.1

##### **back vertex power**

reciprocal of the paraxial vertex focal length

Note 1 to entry: According to ophthalmic convention, the “power” of a lens is specified as the back vertex power.

Note 2 to entry: The unit for expressing focal length is the metre and for vertex power is the reciprocal metre ( $m^{-1}$ ). The name for this unit is “diopetre”, and the symbol is “D”.

[SOURCE: ISO 13666:2019, 3.10.8, modified — A Note 2 to entry was added.]

#### 3.2

##### **reference lens**

lens complying with the requirements of this document used for the calibration and verification of focimeters