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STANDARDS Australia

Australian/New Zealand Standard™

Optics and optical instruments — Test lenses for calibration of focimeters

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

AS/NZS ISO 9342.1:2024

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Australian Dispensing Opticians Association
Cornea & Contact Lens Society of Australia
New Zealand Association of Optometrists
Optical Distributors and Manufacturers Association of Australia
Optometrists and Dispensing Opticians Board
Optometry Australia
Queensland University of Technology
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University of Auckland (New Zealand)
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Australian/New Zealand Standard™

Optics and optical instruments — Test lenses for calibration of focimeters

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

Originates as AS ISO 9342.1:2017.
Second edition 2024.

Preface

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee MS-024, Optics and Ophthalmics, to supersede AS ISO 9342.1:2017, *Optics and optical instruments—Test lenses for calibration of focimeters, Part 1: Test lenses for focimeters used for measuring spectacle lenses.*

The objective of this document is to specify 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 AS ISO 8598.1. It also gives a method for the determination of the back vertex power of the reference lenses.

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 Clause 4.1, can be used for the calibration of digitally-rounding focimeters.

This document is identical with, and has been reproduced from ISO 9342-1:2023, *Optics and optical instruments — Test lenses for calibration of focimeters — Part 1: Reference lenses for focimeters used for measuring spectacle lenses*.

As this document has been reproduced from an international document, a full point substitutes for a comma when referring to a decimal marker.

Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably. Refer to the online catalogue for information on specific Standards.

The terms “normative” and “informative” are used in Standards to define the application of the appendices or annexes to which they apply. A “normative” appendix or annex is an integral part of a Standard, whereas an “informative” appendix or annex is only for information and guidance.

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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).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

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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 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.

Australian/New Zealand Standard

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 "dioptre", 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

3.3
spherical reference lens
lens with spherical front and back surfaces used for the calibration and verification of dioptric power measurements by focimeters

Note 1 to entry: A plane surface is a special case of a spherical surface having an infinite radius of curvature and hence of zero power.