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Third edition
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Ophthalmic optics — Spectacle lenses — Vocabulary

Optique ophtalmique — Verres de lunettes — Vocabulaire

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Contents

Page

Foreword ... **iv**
Introduction ... **vii**
1 Scope ... **1**
2 Normative references ... **1**
3 Terms and definitions ... **1**
3.1 Basic optics ... 1
3.2 Lenses and their dispensing ... 4
3.3 Lens materials ... 14
3.4 Lens surfaces ... 15
3.5 Classification according to function ... 17
3.6 Classification according to form ... 18
3.7 Classification according to type of lens ... 19
3.8 Classification according to state of manufacture ... 20
3.9 Measurement of dioptric properties of lenses ... 22
3.10 Focal properties ... 24
3.11 Prismatic properties ... 28
3.12 Spherical-power lenses ... 30
3.13 Astigmatic-power lenses ... 30
3.14 Lenticular lenses ... 32
3.15 General descriptive terms for multifocal and power-variation lenses ... 33
3.16 Optical centration and focal properties of multifocal and power-variation lenses ... 37
3.17 Transmittance, reflectance and polarization ... 39
3.18 Coatings ... 46
Annex A (informative) **Spectral weighting functions and spectral distributions** ... **48**
Bibliography ... **59**
Alphabetical index ... **60**

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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).

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 (see 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.

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 7, *Ophthalmic optics and instruments.*

This third edition cancels and replaces the second edition (ISO 13666:2012), which has been technically revised.

The main changes compared to the previous edition are as follows:

— Since the document is for spectacle lens terminology, the single word “lens” rather than “spectacle lens” is used throughout the document.

— This revision has resulted in a few terms that were no longer used in lens standards or in communications between participants in the lens manufacturing and dispensing chain being deleted. The terms that were in clause 17 have been either moved or incorporated into earlier terms.

— Over 50 % of terms and definitions have been revised. In some cases, this is as little as changing the order of synonyms for the term, to significant changes in the wording of definitions or notes to entry, but without change of meaning.

— The meaning of vertex distance has been altered so that it now refers to the horizontal distance between the back surface of the lens and the apex of the cornea, measured with the eyes in the primary position. The plane of the lens shape is now defined as being the plane containing the vertical centreline parallel to the horizontal centreline of the individual lens based on the apex of the groove instead of being based on the plane tangential to the demonstration lens. The design reference points are where the manufacturer's specifications apply, while the reference points are where the lenses are to be verified. For single-vision and most multifocal lenses, these are the same. The previous distinction for a multifocal lens, where the distance design reference point was usually the centre of the semi-finished lens blank (now called simply "blank") while the distance reference point was usually the intended position of the optical centre of the distance portion after surfacing, has been removed — they are the design reference point or simply the reference points of the blank and the finished lens.

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— The term "*as-worn" corrected dioptric power* has been replaced by the term *verification power* — this word explains its purpose better, and is clarified by a new definition. Shape magnification has been replaced by the more general *spectacle magnification.*

— The following additional terms have been added:

  — as-worn pantoscopic angle;

  — centration point position;

  — darkened state;

  — degressive-power blank;

  — distance power;

  — faded state;

  — fused multifocal lens;

  — infrared transmittance;

  — lens shape;

  — mean sphere;

  — near power;

  — near reference point;

  — ordered distance prismatic effect;

  — ordered near prismatic effect;

  — ordered power;

  — ordered prismatic effect;

  — position-specific single-vision lens;

  — power-variation blank;

  — power-variation lens;

  — power-variation surface;

  — presbyopia;

  — prescribed power;

  — primary reference point;

  — reference point;

  — secondary reference point;

  — segment bottom;

  — segment top;

  — solar blue-light transmittance;

  — spectacle magnification;

  — spherical equivalent power;

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— traffic signal light;

— ultraviolet transmittance;

— variation power;

— verification power.

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.

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Introduction

This new edition of ISO 13666 has been prepared in line with the new provisions of ISO/IEC Directives, Part 2. This led to a renumbering of all terms. All the terms are now in Clause 3, “Terms and definitions”, so the previous subsections have been made into full subclauses to simplify the numbering. "Notes" have been replaced by "notes to entry" — these can be normative, as opposed to notes in specification standards which are informative.

General considerations in the interpretation of this vocabulary document are:

— since this document relates to spectacle lenses, the simple word 'lens' or 'lenses' is generally used throughout (except where definitions have been quoted from other standards) instead of 'spectacle lens' or 'spectacle lenses'. The term "spectacle lens" is defined in 3.5.2. When “lens” means a lens in general, including but not restricted to spectacle lenses, it is not italicized in the text. When “lens” means a spectacle lens, the word “lens” is put in italics.

— the unit of focusing power, expressed in reciprocal metres (m^{-1}), of a lens or surface is the dioptre. See 3.10.1 for a complete definition;

— the unit of prismatic power is the prism dioptre (Δ), expressed in centimetres per metre (cm/m). See 3.11.11 for a complete definition;

— to simplify definitions and the understanding of the optics of ophthalmic lenses, aberrations of lenses and prisms are ignored in definitions except when specifically mentioned;

— definitions are classified according to subject;

— deprecated: Some obsolete terms are listed for convenience, but are indicated as "DEPRECATED" and should not be used;

— in this document, the word "normal" (to a surface) means a line that is at 90° to the plane that is tangential to the surface at the point of interest, i.e. is perdendicular to the surface at that point.

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Ophthalmic optics — Spectacle lenses — Vocabulary

1 Scope

This document defines terms relating to ophthalmic optics, specifically to blanks, finished spectacle lenses and fitting purposes.

Terms relating to processes and material for fabrication and surface treatment (other than some specific terms relating to coatings), and terms relating to defects in materials and after optical processing are given in ISO 9802.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

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

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

NOTE CIE International Lighting Vocabulary CIE S 017: 2011 is available at http://eilv.cie.co.at/.

3.1 Basic optics

3.1.1
optical radiation
electromagnetic radiation at wavelengths between the region of transition to X-rays ($\lambda \approx 1$ nm) and the region of transition to radio waves ($\lambda \approx 1$ mm)

[SOURCE: CIE S 017:2011, 17-848]

3.1.2
visible radiation
light
any *optical radiation* (3.1.1) capable of causing a visual sensation directly

Note 1 to entry: The limits of photo-detection depend upon the amount of radiant power reaching the retina and the responsivity of the observer.

Note 2 to entry: ISO 20473 specifies the spectral range of *visible radiation* to have a lower limit of 380 nm and an upper limit of 780 nm for application to Optics and Photonics standards. These limits apply to *spectacle lens* (3.5.2) standards.

[SOURCE: CIE S 017:2011, 17-1402, modified — the note has been deleted, while notes 1 and 2 to entry have been added.]

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