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Ögonoptik – Glasögonglas – Terminologi (ISO 13666:2019)

Ophthalmic optics – Spectacle lenses – Vocabulary (ISO 13666:2019)

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Europastandarden EN ISO 13666:2019 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN ISO 13666:2019.

Denna standard ersätter SS-EN ISO 13666:2012, utgåva 2

The European Standard EN ISO 13666:2019 has the status of a Swedish Standard. This document contains the official version of EN ISO 13666:2019.

This standard supersedes the SS-EN ISO 13666:2012, edition 2

Upplysningar om sakinnehållet i standarden lämnas av SIS, Swedish Standards Institute, telefon 08-555 520 00. Standarder kan beställas hos SIS som även lämnar allmänna upplysningar om svensk och utländsk standard.

Information about the content of the standard is available from the Swedish Standards Institute (SIS), telephone +46 8 555 520 00. Standards may be ordered from SIS, who can also provide general information about Swedish and foreign standards.

Denna standard är framtagen av kommittén för Ögonoptik, SIS/TK 336.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

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Supersedes EN ISO 13666:2012

English Version

Ophthalmic optics - Spectacle lenses - Vocabulary (ISO 13666:2019)

Optique ophtalmique - Verres de lunettes - Vocabulaire (ISO 13666:2019)

Augenoptik - Brillengläser - Vokabular (ISO 13666:2019)

This European Standard was approved by CEN on 24 October 2018.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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European foreword

This document (EN ISO 13666:2019) 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of an identical text or by endorsement, at the latest by September 2019, and conflicting national standards shall be withdrawn at the latest by September 2019.

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Endorsement notice

The text of ISO 13666:2019 has been approved by CEN as EN ISO 13666:2019 without any modification.

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.

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.]

3.1.3
ultraviolet radiation
DEPRECATED: ultraviolet
optical radiation (3.1.1) for which the wavelengths are shorter than those for *visible radiation* (3.1.2)

Note 1 to entry: ISO 20473 specifies the spectral range of *ultraviolet radiation* for the application to Optics and Photonics standards and subdivides the UV range into:

— UV-A: 315 nm to 380 nm;

— UV-B: 280 nm to 315 nm;

— UV-C: 100 nm to 280 nm.

Other health and safety disciplines define UV-A as 315 nm to 400 nm.

[SOURCE: CIE S 017:2011, 17-1367, modified —The notes have been deleted while note 1 to entry has been added.]

3.1.4
infrared radiation
DEPRECATED: infrared
optical radiation (3.1.1) for which the wavelengths are longer than those for *visible radiation* (3.1.2), from 780 nm to 1 mm

Note 1 to entry: For *infrared radiation*, the range between 780 nm and 1 mm is commonly subdivided into:

— IR-A: 780 nm to 1 400 nm;

— IR-B: 1,4 µm to 3 µm;

— IR-C: 3 µm to 1 mm.

Note 2 to entry: These limits are also specified in ISO 20473.

Note 3 to entry: The solar *infrared radiation* spectrum at sea level extends to about 2 000 nm.

Note 4 to entry: The range of *infrared radiation* emitted by the source and reaching the *lens* shall be considered in the design of an *infrared radiation*-absorbing material.

[SOURCE: CIE S 017:2011, 17-580, modified — Notes 2, 3 and 4 to entry have been added.]

3.1.5
refractive index
$n(\lambda)$
ratio of the velocity of propagation of monochromatic radiation of the wavelength (λ) in vacuum to its velocity of propagation in the medium

Note 1 to entry: For technical applications, the *refractive index* is given against air instead of against vacuum.

Note 2 to entry: The wavelengths to be used for the characterization of *optical materials* (3.3.1), all kinds of optical systems and instruments, and *spectacle lenses* (3.5.2), are specified in ISO 7944.

3.1.6
chromatic dispersion
change in the *refractive index* (3.1.5) of monochromatic radiation in a medium as a function of the frequency of the radiation

Note 1 to entry: The *chromatic dispersion* gives rise to chromatic aberration in a lens made from dispersive materials.

3.1.7
Abbe number
υ_d, υ_e
DEPRECATED: constringence
DEPRECATED: V-value
indicator of the *chromatic dispersion* (3.1.6) of an *optical material* (3.3.1) or component

Note 1 to entry: The *Abbe number* can be calculated as either:

$$\upsilon_d = \frac{n_d - 1}{n_F - n_C}$$

where

n_d is the *refractive index* of the yellow helium d-line (wavelength: 587,56 nm);

n_F is the *refractive index* of the blue hydrogen F-line (wavelength: 486,13 nm); and

n_C is the *refractive index* of the red hydrogen C-line (wavelength: 656,27 nm);

or

$$\upsilon_e = \frac{n_e - 1}{n_{F'} - n_{C'}}$$

where

n_e is the *refractive index* of the green mercury e-line (wavelength: 546,07 nm);

$n_{F'}$ is the *refractive index* of the blue cadmium F′-line (wavelength: 479,99 nm); and

$n_{C'}$ is the *refractive index* of the red cadmium C′-line (wavelength: 643,85 nm).

Note 2 to entry: These reference wavelengths are given in ISO 7944:1998.

3.1.8
optical axis
straight line joining the centres of curvature of both surfaces of a *lens* (3.5.2)

Note 1 to entry: This line is normal to both optical surfaces so light can pass along it undeviated.

Note 2 to entry: For *lenses* (3.5.2) with strong *prismatic power* (3.11.10), the *optical axis* can lie outside the area of the *lens*.

Note 3 to entry: *Power-variation lenses* (3.7.7) do not have a true *optical axis*.

3.1.9
vertex
point of intersection of the *optical axis* (3.1.8) with a surface of a *lens* (3.5.2)

3.1.10
power
capacity of a *lens* (3.5.2) or optical surface to change the curvature or direction of incident wavefronts by refraction

3.1.11
focal point
image point conjugate to an infinitely distant object point on the *optical axis* (3.1.8)

3.1.12
bioactinic
exhibiting or referring to *bioactinism* (3.1.13)

3.1.13
bioactinism
property of *optical radiation* (3.1.1) that enables it to cause chemical changes to biological tissues