



# SLOVENSKI STANDARD oSIST prEN ISO 10322:2025

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## Očesna optika - Napol zgotovljena stekla očal (ISO/DIS 10322:2025)

Ophthalmic optics - Semi-finished blanks (ISO/DIS 10322:2025)

Augenoptik - Einseitig fertige Brillenglasblanks (ISO/DIS 10322:2025)

Optique ophtalmique - Verres de lunettes semi-finis (ISO/DIS 10322:2025)

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# DRAFT International Standard

## ISO/DIS 10322

### Ophthalmic optics — Semi-finished blanks

*Optique ophtalmique — Verres de lunettes semi-finis*

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## ISO/DIS 10322:2025(en)

## 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](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*.

This fifth edition cancels and replaces the fourth editions (ISO 10322-1:2016 and ISO 10322-2:2016), which have been combined and technically revised.

The main changes are as follows:

- The two original parts have been combined;
- Blanks have been classified by the type of finished surface, not by their intended use, since what were termed single-vision blanks may be used to make multifocal or power-variation surfaces by using free form technology;
- A cross reference has been made in [5.1](#) to the requirements in ISO 14889;
- The description of blank diameters has been amended with effective diameter now called actual diameter and different tolerances;
- The text on addition power or variation power measurement has been made more similar to that in ISO 8980-1 and -2, where appropriate.

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).

# Ophthalmic optics — Semi-finished blanks

## 1 Scope

This document specifies requirements for the optical and geometrical properties of semi-finished blanks.

## 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 photonics — Reference wavelengths*

ISO 8598-1, *Optics and optical instruments — Focimeters — Part 1: General purpose instruments*

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

ISO 14889, *Ophthalmic optics — Spectacle lenses — Fundamental requirements for uncut finished lenses*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 13666 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/>

<https://standards.iteh.ai/catalog/standards/sist/0f1ceb64-8458-4ccd-8069-6e4408554cfb/osist-pren-iso-10322-2025>

## 4 Classification

Semi-finished blanks (shortened to blanks in the remainder of this document for easier reading) shall be classified according to the finished surface as follows:

- a) blanks with spherical finished surfaces;
- b) blanks with aspherical, toroidal and atoroidal finished surfaces;
- c) blanks with multifocal finished surfaces;
- d) blanks with power-variation finished surfaces.

## 5 Requirements

### 5.1 General

The tolerances shall apply at a temperature of  $(23 \pm 5) ^\circ\text{C}$ . It shall be possible for lenses made from these blanks according to the manufacturer's instructions to comply with the requirements of ISO 14889.

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## 5.2 Optical requirements for the finished surface

## 5.2.1 General

The optical tolerances shall apply to the manufacturer's stated values at the reference points of the blank at one of the two reference wavelengths specified in ISO 7944.

The reference point should be specified by the manufacturer. If no reference point is specified, the blank's geometrical centre may be assumed to be the reference point.

The power ranges and tolerances in [Tables 1, 2, 3](#) and [4](#) are expressed as surface power values, in dioptres, in the refractive index of the material of the blank being measured.

## 5.2.2 Surface power

The tolerances on the surface power of blanks with spherical, aspherical, toroidal, atoroidal and multifocal surfaces as specified in [Table 1](#) shall apply at the reference point and shall be measured using the method described in [6.2](#).

**Table 1 — Tolerances on the surface power of blanks with spherical, aspherical, toroidal, atoroidal and multifocal surfaces**

All values in dioptres (D) in the refractive index of the material – see [Annex B](#)

| Nominal surface power <sup>a, b</sup><br>(Absolute value)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Tolerance on surface power <sup>a, b</sup> | Tolerance on surface cylindrical power <sup>c</sup><br>$ F_1 - F_2 $ |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|----------------------------------------------------------------------|
| $\geq 0,00$ and $\leq 2,00$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | $\pm 0,09$                                 | 0,06                                                                 |
| $> 2,00$ and $\leq 10,00$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | $\pm 0,06$                                 | 0,06                                                                 |
| $> 10,00$ and $\leq 15,00$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | $\pm 0,09$                                 | 0,06                                                                 |
| $> 15,00$ and $\leq 20,00$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | $\pm 0,12$                                 | 0,08                                                                 |
| $> 20,00$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | $\pm 0,25$                                 | 0,08                                                                 |
| <sup>a</sup> For blanks that are intended to have either no surface cylindrical power or a surface cylindrical power $< 0,25$ D, these nominal surface powers and the tolerances apply to the mean sphere: $\frac{F_1 + F_2}{2}$ , where $F_1$ and $F_2$ are the maximum and minimum absolute values of the surface power.<br><sup>b</sup> For blanks that are intended to have an absolute surface cylindrical power $\geq 0,25$ D, these nominal surface powers and the tolerances apply to the principal meridian of numerically lower power.<br><sup>c</sup> Relative to zero, or to any intended surface cylindrical power of the blank's design, where this is $< 0,25$ D and where $F_1$ and $F_2$ are the maximum and minimum values of the surface power.<br>See <a href="#">Table 3</a> for the tolerances to be applied to the intended cylindrical power when this is $\geq 0,25$ D. |                                            |                                                                      |

The tolerances on the surface power of blanks with power-variation surfaces as specified in [Table 2](#) shall apply at the primary reference point and shall be measured using the method described in [6.2](#).

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**Table 2 — Tolerances on the surface power at the primary reference point of blanks with power-variation surfaces**All values in dioptres (D) in the refractive index of the material – see [Annex B](#)

| Nominal surface power                                                                              | Tolerance on the surface mean sphere | Tolerance on surface cylindrical power <sup>a</sup> |
|----------------------------------------------------------------------------------------------------|--------------------------------------|-----------------------------------------------------|
|                                                                                                    | $\frac{F_1 + F_2}{2}$                | $ F_1 - F_2 $                                       |
| $\geq 0,00$ and $\leq 10,00$                                                                       | $\pm 0,09$                           | 0,09                                                |
| $> 10,00$ and $\leq 15,00$                                                                         | $\pm 0,12$                           | 0,12                                                |
| NOTE $F_1$ and $F_2$ are the maximum and minimum values of the surface power.                      |                                      |                                                     |
| <sup>a</sup> Relative to zero, or to any intended surface cylindrical power of the blank's design. |                                      |                                                     |

**5.2.3 Uniformity of the surface power of blanks with nominally spherical single-vision and multifocal surfaces**

Over a zone of 40 mm diameter centred around the reference point, the surface power shall comply with the requirements of [5.2.2](#) and not deviate by more than 0,06 D from the surface power measured at the reference point.

The uniformity shall be determined using a suitable instrument and the method described in [6.2](#).

**5.2.4 Intended surface cylindrical power of blanks with single-vision or multifocal surfaces**

The tolerances on the intended surface cylindrical power as specified in [Table 3](#) shall apply at the reference point and shall be measured using the method described in [6.2](#).

**Table 3 — Tolerances on the intended surface cylindrical power**All values in dioptres (D) in the refractive index of the material – see [Annex B](#)

| Intended cylindrical power<br>(Absolute Value) | Tolerance  |
|------------------------------------------------|------------|
| $\geq 0,25$ and $\leq 4,00$                    | $\pm 0,06$ |
| $> 4,00$ and $\leq 6,00$                       | $\pm 0,09$ |
| $> 6,00$                                       | $\pm 0,12$ |

NOTE The tolerance on the power of the principal meridian with lower absolute power is given in [Table 1](#).

**5.2.5 Surface addition power or variation power for blanks with multifocal or power-variation surfaces**

The tolerances on the addition or variation power as specified in [Table 4](#) shall apply at the reference points and shall be measured using the method described in [6.3](#).

This subclause applies to power-variation blanks only if they have both a primary and a secondary reference point.

**Table 4 — Tolerances on the surface addition power or variation power**All values in dioptres (D) in the refractive index of the material – see [Annex B](#)

| Surface addition power | Tolerance  |
|------------------------|------------|
| $\leq 4,00$            | $\pm 0,12$ |
| $> 4,00$               | $\pm 0,18$ |

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## 5.3 Geometrical tolerances

## 5.3.1 Classification of and tolerances on the size

The sizes are classified as follows:

- a) Nominal size,  $d_n$  The label or packaging value;
- b) Actual size,  $d_a$  The largest physical diameter, in millimetres, of the blank;
- c) Useable size,  $d_u$  The diameter, in millimetres, of the blank that the manufacturer states is usable.

For blanks that are intentionally not round, or that have different horizontal and vertical dimensions, the manufacturer shall state the equivalent sizes for the horizontal and vertical dimensions, separated by 'x'. This typically applies to elliptical shaped blanks. It also applies to polarizing blanks with notches indicating the intended horizontal orientation of the lens, where the notching may result in different usable horizontal and vertical dimensions.

For the usable size of pre-decentred blanks, the horizontal dimensions shall be indicated the physical usable dimension of the blank followed by the effective larger dimension, the values separated by a '/'. Pre-decentred blanks can have an aspherical or power-variation finished surface, with the design reference point displaced from the geometrical centre, usually nasally, in order to provide an effectively larger blank. A typical displacement of 2,5 mm of the design reference point of a 65 mm blank provides a larger temporal zone equivalent to a blank of 70 mm diameter. These dimensions are identified as 65/70.

The tolerances to be applied are:

- a) Nominal size,  $d_n$ : No tolerance applied;
- b) Actual size,  $d_a$ :  $\pm 1,5$  mm;
- c) Useable size,  $d_u$ :  $\begin{matrix} +2,0 \\ -1,0 \end{matrix}$  mm.

The tolerance on usable size does not apply to blanks for lenses with a carrier curve, such as lenticulars.

## 5.3.2 Thickness

## 5.3.2.1 Centre thickness

The centre thickness, when measured at the geometrical centre (unless otherwise stated by the manufacturer), shall be neither less than the minimum thickness stated by the manufacturer nor exceed this minimum thickness by more than 3 mm.

## 5.3.2.2 Edge thickness

When measured at the point stated by the manufacturer, the edge thickness shall be neither less than the minimum thickness stated by the manufacturer nor exceed this minimum thickness by more than 3 mm.

## 5.3.3 Segment tolerances for blanks with multifocal surfaces

## 5.3.3.1 Dimensions

When using one of the methods described in 6.3, each of the segment dimensions (width, depth and intermediate depth) shall not deviate from its nominal value by more than  $\pm 0,5$  mm.

If sold as a matched pair, each of the segment dimensions shall not differ between the left and right blanks by more than 0,7 mm.