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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

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Optometry products - Safety technical specifications for components

眼视光产品 元件安全技术规范

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1 Scope

China's mandatory safety specification for the components of optometry products - the lenses, frames, temples, bridges, nose pads and fittings from which spectacles are made, regulated at the component level so that a compliant pair cannot be assembled from non-compliant parts. It is the companion of GB 45185, which covers the finished spectacles. It specifies the safety technical requirements for the components of optometry products, together with the corresponding test methods. Spectacles are a medical device

worn against the face for most of the waking day, usually for years, and the risks are of two kinds. The first is mechanical: a lens or a frame that breaks can injure the eye it was meant to serve, so the standard sets the impact resistance of the lenses, the strength of the frame and its joints, the security of the lens in the rim, and the freedom from sharp edges and protruding parts. The second is chemical, and it is the reason a component standard exists separately: the frame is in prolonged contact with the skin, so the standard limits the nickel release from the metal parts, which is the commonest cause of contact dermatitis from spectacles, together with the heavy metals - lead, cadmium, chromium - the restricted azo colourants in the plastics and coatings, and the other substances that migrate out of a material worn against the skin for years. To those are added the optical requirements the component must meet for the finished pair to be correct, and the marking that lets a manufacturer, and an inspector, know what a component is and what it was made from. Issued on 31 December 2024 and in force since 1 January 2026.

This document defines the terms and definitions of optometry product components, specifies safety technical requirements, and describes the corresponding test methods. This document applies to components of optometry products.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 6682, Water for analytical laboratory use - Specification and test methods

GB/T 26397, Ophthalmic optics - Terminology

GB/T 38009, Spectacle frames - Requirement and method for the detection of nickel release

ISO 13666, Ophthalmic optics - Spectacle lenses - Vocabulary

3 Terms and definitions

For the purposes of this document, the following terms and definitions, as well as those given in GB/T 26397 and ISO 13666, apply.

3.1 finished spectacles Various types of glasses that can be used directly.

Note. Types generally refer to ordinary spectacles, partially enclosed or fully enclosed eye masks, flip-up or detachable additional lenses, etc. Common finished spectacles include custom-made glasses, presbyopia glasses, sunglare filters, swimming goggles, glasses for alpine snow use, special glasses for motor vehicle driving, polarized three-dimensional glasses, etc. Sunglare filter with a nominal vertex power of zero.

4 Safety technical requirements

4.1 General The refractive performance of lens shall be measured using a focimeter or equivalent method. The optical parameters of the lens shall be measured at the reference points. If the manufacturer explicitly states that the vertex power value of the wearing position will be corrected, it shall be tested against the calibration vertex power, and the corresponding calibration vertex power deviation shall comply with the provisions of Tables 1 ~

5.The manufacturer's declared calibration vertex power for the wearing position shall be indicated on the packaging or attachments.

4.2.1 Vertex power

4.2.1.1 Measure according to the method described in 5.2.1.The deviation of the vertex power of each principal meridian plane of the lens and the deviation of vertex power of the cylindrical lens shall comply with the requirements of Table 1 or Table 2. upper and lower limits of the classification; for categories 3 and 4, there shall be no overlap. -- If the manufacturer marks the visible light transmittance value, for categories 0 ~ 3, the absolute deviation of the visible light transmittance shall not exceed ±3%; for category 4, the relative deviation of the visible light transmittance shall not exceed ±30%.

4.3.2 Visible light transmittance uniformity Measured according to the method described in 5.3.4, the visible light transmittance uniformity (DeltaF) of the plano sunglare filter shall comply with. -- Category 0 ~ 3 lenses. DeltaF <=10%; -- Category 4 lenses. DeltaF <=20%. The visible light transmittance uniformity (DeltaP) of unmounted binocular plano sunglare filter shall not be greater than 15%.

Note. Not including changes in visible light transmittance due to thickness variations in lens design.

4.3.3 Scattered light Measured according to the method described in 5.3.5, the haze value of plano sunglare filter shall not be greater than 3%.

4.3.4 Applicable requirements for walking and driving

4.3.4.1 Daytime driving Measured according to the method described in 5.3.2, the visible light transmittance tauV of the lens shall not be less than 8%.

4.3.4.2 Driving at dawn, dusk and night Measured according to the method described in 5.3.2, the visible light transmittance tauV of the lens shall not be less than 75%.

4.3.4.3 Spectral transmittance Measured according to the method described in 5.3.2, the spectral transmittance of the lens, within the range of 475 nm ~ 650 nm, shall not be less than 0.2 tauV.

4.3.4.4 Traffic light identification Measured according to the method described in 5.3.2, the relative visual attenuation factor (Q) of the lens shall comply with the following requirements.

4.7 Nickel release For metal frames and metal parts of hybrid frames that are in direct contact with the wearer's skin for a long time, the nickel release shall not be greater than 0.5 μg/(cm2·week) when tested according to the method described in 5.7. Parts to be tested include.

b) nose bridge, crossbar, and other nose-supporting surfaces, including metal nose pads;

c) temples (excluding the hinges, the area around the hinges and the area protected by the plastic sleeve).

5 Test methods

5.1 Test conditions The test environment temperature is 23 °C ± 5 °C.

5.2.1 Vertex power

5.2.1.1 Lens Place the back surface of the lens on the focimeter holder and center it; measure at the reference point of the lens.

5.2.1.2 Plano sunglare filter 5.2.1.2.1 General Measure using the finite telescope method. Or use other equivalent measurement methods, such as focimeter, etc. If there is a discrepancy between the measurement results of the finite telescope method and those of the focimeter, the finite telescope method shall prevail. 5.2.1.2.2 Finite telescope method 5.2.1.2.2.1 Test apparatus The test apparatus for the finite telescope method is shown in Figure 2. -- For multifocal lenses, determine the horizontal reference line as described in

5.2.2.2 and measure the horizontal and vertical components at the distance reference point.

5.2.4.2 Power-variation lens Align the prism reference point of the lens; use the permanent mounting reference provided by the manufacturer to determine the horizontal reference line; measure the horizontal and vertical prismatic power. The measurement can also be performed using a prism compensation device that is in the opposite direction to the base of the prismatic power being measured.

5.2.4.3 Plano sunglare filter 5.2.4.3.1 General Measure using the finite telescope method. Or use other equivalent measurement methods, such as focimeter, etc. If there is a discrepancy between the measurement results of the finite telescope method and those of the focimeter, the finite telescope method shall prevail. 5.2.4.3.2 Finite telescope method Place the sample as described in 5.2.1.2.4.2 and observe through the telescope the relative position of the crosshairs in the eyepiece on the standard measuring plate. If the crosshairs fall on the outer edge of the large circle, the prismatic power is equal to