

ICS 11.040.70
CCS Y 89



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 10810.4-2025

Replacing GB 10810.4-2012

**Uncut finished spectacle lenses - Part 4: Anti-reflective
coatings test methods**

眼镜镜片第4部分：减反射膜试验方法
(English Translation)

Issued on: February 28, 2025

Implemented on: March 1, 2026

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document is Part 4 of GB/T 10810 "Spectacle Lenses". GB/T 10810 has published the following parts.

--- Part 1: Single focal and multifocal;

---Part 2: Gradual zoom;

--- Part 3: Transmittance test method;

--- Part 4: Test methods for anti-reflection coatings;

--- Part 5: Surface wear test method.

This document replaces GB 10810.4-2012 "Spectacle lenses Part 4: Anti-reflection coating specifications and measurement methods" Compared with GB 10810.4-2012, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

- a) The terms and definitions have been changed (see Chapter 3, 3.1 to 3.6 of the 2012 edition);
- b) The requirements and inspection rules have been deleted (see Chapter 4 and Chapter 6 of the 2012 edition);
- c) The wavelength interval has been changed (see Appendix A, Appendix B of the 2012 edition).

This document is modified from ISO 8980-4:2006 "Ophthalmic optics - Uncut spectacle lenses - Part 4: Specifications and tests for anti-reflective coatings" This document has made the following structural adjustments compared to ISO 8980-4:2006.

- Move 5.2~5.5 of ISO 8980-4:2006 to Chapter 6;
- Added Chapter 5, Chapter 7 to Chapter 14 and Appendix A;
- Appendix B corresponds to Appendix A of ISO 8980-4:2006.

The technical differences between this document and ISO 8980-4:2006 and their reasons are as follows.

- Replaced ISO 13666 with the normative reference GB/T 26397, added anti-reflection coating, spectral reflectance, light reflectance and peace The term and definition of average reflectance (see Chapter 3) are updated to suit my country's technical conditions and increase operability;
- Deleted the requirements, general test methods, durability test methods and related appendices (see Chapter 4, 5.1, 5.6, Appendix B to Appendix G), to adapt to my country's technical conditions and increase operability;
- Added film appearance test, double surface light reflection test, film uniformity test, salt water test, low temperature test, high temperature test, film The coating adhesion test and coating area size test method (see Chapter 5, Chapter 7 to Chapter 13) are to adapt to the technical requirements of my country. Technical conditions, increase operability;
- Added test report (see Chapter 14) to adapt to my country's technical conditions and increase operability;
- Added relevant data for light reflectance calculation (see Appendix A) to adapt to my country's technical conditions and increase operability. The following editorial changes were made to this document.

--- To coordinate with the existing standards in my country, the name of the standard is changed to "Spectacle Lenses Part 4: Test Method for Anti-reflection Coatings".

Introduction

The main function of lenses is to correct vision and protect eyes. They are an important part of glasses and can meet the needs of users in different occasions.

The visual needs of people are of great significance to their vision health. GB/T 10810 "Spectacle Lenses" aims to standardize the production and use of lenses and improve The quality and safety of the lenses.

GB/T 10810, as a recommended national standard supporting the mandatory national standards, consists of five parts.

--- Part 1: Monofocal and multifocal lenses. The purpose is to ensure the quality of monofocal and multifocal lenses by standardizing the requirements and test methods. Price criteria.

--- Part 2: Progressive lenses. The purpose is to ensure the quality evaluation criteria by standardizing the requirements and test methods for progressive lenses.

--- Part 3: Transmittance test method. The purpose is to establish the test method for the transmittance performance of lenses and to establish its quality evaluation criteria.

--- Part 4: Test methods for anti-reflection coatings. The purpose is to establish test methods for anti-reflection coatings on lenses and to establish quality evaluation standards. Guidelines.

--- Part 5: Surface abrasion test methods. The purpose is to establish multiple abrasion test methods for lenses and establish their quality evaluation criteria. Spectacle lenses - Part 4: Test methods for anti-reflective coatings

1 Scope

This document describes the instrumentation, samples, test procedures and test data processing for the anti-reflection film performance test of coated lenses.

This document is applicable to the testing of anti-reflection films on coated lenses.

2 Normative references

The contents of the following documents constitute essential clauses of this document through normative references in this document.

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version

(including all amendments) applies to This document.

GB/T 26397 Ophthalmic Optics Terminology (GB/T 26397-2011, ISO 13666:1998, MOD)

3 Terms and definitions

The terms and definitions defined in GB/T 26397 and the following apply to this document.

3.1 Anti-reflective coating; antireflection coating

In order to reduce the reflection of light on the lens surface, a film layer is coated on the lens surface.

3.2 Spectral reflectance

$\rho(\lambda)$

The ratio of the reflected spectral flux at a lens surface to the incident spectral flux at a specific wavelength.

Note: Usually it is the single surface value of the lens. If it is the double surface value of the lens, please explain it.

3.3 Luminous reflectance

ρ_v The ratio of the reflected luminous flux of a specific form of material (such as a lens, film or filter) to the incident luminous flux under a specified lighting source. The learning formula is.

$\Phi_R = \Phi_I \rho(\lambda) V(\lambda) \int_{380\text{nm}}^{780\text{nm}} S(\lambda) d\lambda$
 $\Phi_R = \Phi_I \rho(\lambda) V(\lambda) \int_{380\text{nm}}^{780\text{nm}} S(\lambda) d\lambda$ (1) Where. Φ_I --- incident luminous flux; Φ_R --- Reflected luminous flux; $\rho(\lambda)$ --- spectral reflectance; $V(\lambda)$ --- Spectral luminous efficiency function under sunlight;

$S(\lambda)$ --- Spectral distribution function of CIE standard illuminant D65. The product of $S(\lambda)$ and $V(\lambda)$ is calculated according to Table A.1 in Appendix A. The specified relevant data are calculated.