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Industry Standard of the People's Republic of China

QB/T 2659—2021
Replace QB/T 2659—2004

Spectacles for vehicle driving and road use

机动车驾驶专用眼镜

（English Translation）

（报批稿）

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CONTENTS

Foreword

SAC/TC103/SC3 is in charge of this English translation. In case of any doubt about the contents of English translation, the Chinese original shall be considered authoritative.

This standard is drafted in accordance with the rules given in the GB/T 1.1—2020*: Directives for standardization Part 1: Rules for the structure and drafting of standardizing documents*

This standard replaces the QB/T 2659—2004 *: Spectacles for driving*

In addition to a number of structural adjustments and editorial changes, the following technical deviations have been made with respect to the QB/T 2659—2004:

a) Changed the scope of this standard to be applicable to finished filters which are used when driving automobiles, motorcycles and other motor vehicles (see Chapter 1, Chapter 1 of the 2004 edition);
b) Deleted some references to terms and definitions (see 3.1～3.11 of the 2004 edition);
c) Added terms and definitions, definitions of spectacles for vehicle driving and road use and spectacles for driving (see 3.1);
d) Changed the classification application scenarios and expressions (see Chapter 4, 5.8.1, Chapter 4 of the 2004 edition, 5.4.1);
e) Deleted the relevant requirement of lens thickness (see 5.1.2 of the 2004 edition);
f) Changed the relevant requirement of prismatic power (see 5.3, 5.1.4 of the 2004 edition);
g) Changed the relevant requirement of the frame requirements, and specify appearance quality, endurance, bridge deformation and lens retention characteristics, and coating quality in detail (see 5.1.2, 5.5, 5.6, 5.7, and 5.2 of the 2004 edition).);
h) Changed the relevant requirement of the assembly quality of spectacles for driving (see 5.4, 5.3 of the 2004 edition);
i) Changed the relevant requirement of the luminous transmittance uniformity of the lens. (see 5.8.2, 5.4.2.1 of the 2004 edition);
j) Changed the wavelength range of the spectral transmittance of the lens into 475 nm～650 nm now (see 5.8.3, 5.4.2.2 of the 2004 edition);
k) Changed the relevant requirement of visual attenuation quotient Q of filters (see 5.8.4, 2004 edition of 5.4.2.3);
l) Delete the relevant requirement of UV spectrum transmittance (see 5.4.3.2 of the 2004 edition);
m) Changed the relevant requirement of the polarization direction of the polarizing lens (see 5.11, 5.7 in the 2004 edition);
n) Delete the relevant test methods of lens frame, assembly quality and impact resistance (see 2004 edition of 6.1, 6.2, 6.3, 6.5);
o) Changed the relevant requirement of the lable of spectacles for driving (see 8.1, 8.1.1 of the 2004 edition);
p) Deleted Appendix A and Appendix B (see Appendix A and Appendix B of the 2004 edition).

The previous editions of this part are as follows: — QB/T 2659—2004

Spectacles for vehicle driving and road use

1 Scope

This standard specifies the terms, definitions, classification, requirements, test methods, inspection rules, identification, packaging, transportation and storage of spectacles for vehicle driving and road use.
This standard is applicable to finished filters with plano lens which are used when driving automobiles, motorcycles and other motor vehicles.

2 Normative references

The following referenced documents are indispensable for the application 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.
GB/T 2828.1 *Sampling procedures for inspection by attributes—Part 1:Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*
GB 10810.1 *Uncut finished spectacle lenses—Part 1:Specifications for single-vision and multifocal lenses*
GB 10810.3 *Uncut finished spectacle lenses—Part 3:Transmittance specifications and test methods*
GB/T 14214—2019 *Spectacle frames—General requirements and test methods*
GB/T 26397 *Ophthalmic optics—Terminology*
QB/T 2506 *Uncut finished spectacle lenses—Optical hard resin lenses*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in GB/T 26397 and the following apply.

3.1

spectacles for vehicle driving and road use
spectacles for driving
finished filters with plano lens which are used when driving automobiles, motorcycles and other motor vehicles.

4 Classification

Spectacles for driving are classified into Categories I (only for daylight use) and Categories II (for daylight, dawn, twilight and night use) in accordance with the use scene.

5 Requirements

5.1 Surface quality

5.1.1 Filter material and surface quality

When tested in accordance with the method specified in GB 10810.1, except in a marginal area 5 mm wide, filters shall have no material or machining defects within an area of 30 mm diameter around the

reference point that might impair vision. Outside this identification area, isolated and tiny filter material and surface defects are allowed.

5.1.2 Frame appearance quality

In accordance with visual inspection, the surface of the frame shall be smooth, free of blemishes, no obvious scratches, and edges shall be rounded.

5.2 Refractive power

When tested in accordance with the method specified in GB 10810.1, the absolute value of spherical power shall not exceed 0.12 m^{-1}, and the absolute value of astigmatic power shall not exceed 0.09 m^{-1}.

5.3 Prism imbalance (relative prism error)

When tested in accordance with the method specified in GB 10810.1, the absolute value of the prismatic power difference between left and right lenses shall comply with Table 1.

Table 1 Prism imbalance

Unit: cm/m

Horizontal		Vertical Prism dioptres
Base out prism dioptres	Base in prism dioptres	
≤1.00	≤0.25	≤0.25

5.4 Assembly quality

In accordance with visual inspection of spectacles for driving, the geometrical shapes of the lens and the rim shall be similar and aligned. There shall be no obvious gaps after assembly.

5.5 Endurance

When the spectacle frame is tested in accordance with the method specified in GB/T 14214—2019 8.7, there shall not:

a) fracture or crack at any point;
b) be permanently deformed from its original position by more than 5 mm after 500 cycles;
c) require more than light finger pressure to open and close the sides (except for frames fitted with sprung joints);
d) have a side that closes under its own weight at any point in the opening/closing cycle (for frames not fitted with sprung joints), or for sides fitted with sprung joints, the side shall still support its weight in the open position (i.e. opened to the fullest natural extent without activating the spring mechanism).

5.6 Bridge deformation and lens retention characteristics

When the spectacle frame is tested in accordance with the method specified in GB/T 14214—2019 8.6, there shall be followed:

a) no fracture or crack at any point;
b) not be permanently deformed from its original configuration by more than 2% of the distance between the boxed centres of the spectacle frame;
c) neither test lens shall be dislodged wholly or partially from its original configuration in the groove or mount.

5.7 Coating quality

5.7.1 Resistance to perspiration

5.7.1.1 When the spectacle frame is tested in accordance with the method specified in GB/T 14214—2019 8.4, visual inspection after testing for 8 h and a total of 24 h, there shall be:

a) no spotting or colour change (except for loss of gloss on surface) anywhere on the frame, excluding joints and screws, after testing for 8 h, and

b) no corrosion, surface degradation or separation of any coating layer on the parts liable to come into prolonged contact with the skin during wear, i.e. the insides of the sides, bottom and lower parts of the rim and the inside of the bridge, after testing for a total of 24 h.

5.7.1.2 If the spectacle frame is made from natural materials and the manufacturer recommends a cream or wax for its maintenance, then, before testing, the frame(s) shall be prepared with this cream or wax in accordance with the manufacturer's instructions. At the end of the test, if the frame fails to meet this requirement when checked for colour change or surface degradation, use the cream or wax and wait for one day before checking again for colour change or surface degradation. If the frame has recovered its original appearance, the spectacle frame is considered to have passed the test; if the frame remains discolored or surface degraded, the frame is considered to have failed the test.

5.7.2 Coating adhesion

For spectacle frames with surface coating (such as electroplating layer, organic film layer) on the temples, when tested in accordance with the method specified in GB/T 14214—2019 8.5, the coating of the tested side shall not peel off.

5.8 Transmittance properties

5.8.1 Luminous transmittance

Transmittance categories shall be determined in accordance with Table 2.

Table 2 Transmittance requirements of spectacles for driving

Categories of spectacles for driving	Luminous transmittance τ_V
I	$8.0<\tau_V\leqslant 75.0$
II	$\tau_V>75.0$

5.8.2 Luminous transmittance uniformity

The relative deviation of the luminous transmittance of the left and right lens at the reference points (relative to the larger value) shall be not exceed 15%.

NOTE: Luminous transmittance deviations due to lens thickness changes by design is not included.

5.8.3 Spectral transmittance

The spectral transmittance $\tau(\lambda)$ at any wavelength in the range 475 nm to 650 nm shall be not less than 0.2 τ_V.

5.8.4 Detection of signal lights

The relative visual attenuation quotient Q of filters shall be not less than:
0.80 for Q_{red}, 0.60 for Q_{yellow}, 0.60 for Q_{blue}, 0.60 for Q_{green}.

5.8.5 UV transmittance properties

The UV transmittance of the lens τ_{SUV} shall not exceed 1.0%.

5.9 Impact resistance

When tested in accordance with the method specified in QB/T 2506, none of the following defects shall appear:

a) It cracks through its entire thickness and across a complete diameter into two or more separate pieces;
b) A piece of material has become detached from the lens back surface;
c) The test ball passes through the lens.

5.10 Inflammability

When tested in accordance with the method specified in 6.3, there shall be no continued combustion after withdrawal of the test rod.

5.11 Polarizing axis deviation

When tested in accordance with the method specified in 6.4, the polarizing filters shall be fitted in the frame so that their planes of transmission do not deviate from the vertical, or from the prescribed direction if different from the vertical, by more than ± 5°. Additionally, any misalignment between the planes of transmission of the left and right filters shall not be greater than 6°.
In the case of clip-ons, the spectacles for driving shall be tested in the position assumed to be taken when mounted on the spectacles.

6 Test methods

6.1 Test conditions

Unless otherwise specified, the test temperature for testing shall be at (23 ± 5) ℃. Relative humidity shall be maintained between 30% and 80%.

6.2 Transmittance properties

Test the transmittance properties of lenses in accordance with the method specified in GB 10810.3.

6.3 Test for inflammability

6.3.1 Test apparatus

Apparatus shall be followed:
——Steel rod: (300 ± 3) mm long and 6mm in nominal diameter, with end faces that are flat and perpendicular to the longitudinal axis;
——Heat source;
——Thermocouple and temperature-indicating devices;
——Timer: the resolution is ±0.1 s and the measurement range is not less than 10 s.

6.3.2 Test procedure

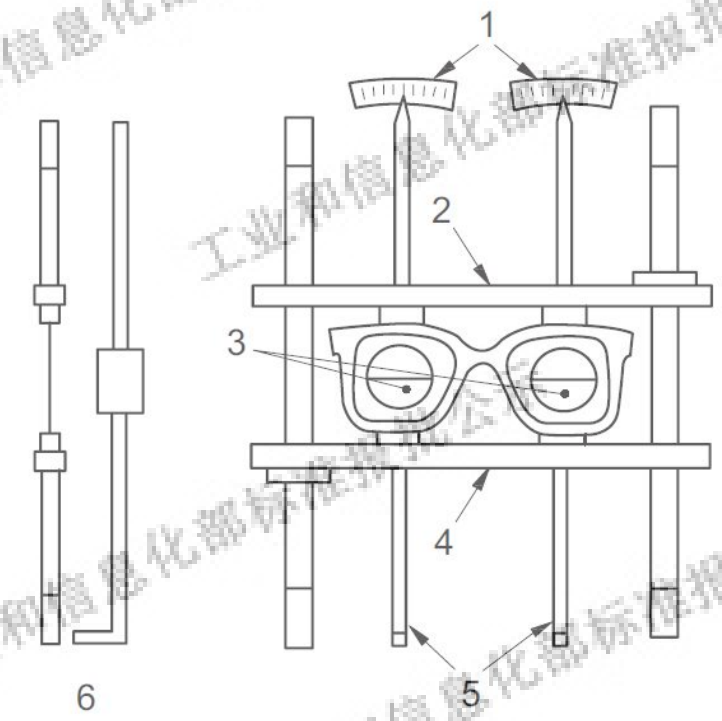
Heat one end of the steel rod over a length of at least 50 mm to a temperature of (650 ± 10) ℃. Measure the temperature of the rod by means of the thermocouple attached at a distance of (20 ± 1) mm from the heated end of the rod.
Press the heated face of the rod (positioned vertically with the heated end downwards) against the surface of test sample (the contact force being equal to the weight of the rod) for a period of (5.0 ± 0.5) s. Then remove the rod.
Test all exposed parts of the spectacles for driving. For some special styles of spectacles for driving, the elastic headband and fibrous lining of the spectacles for driving may not be tested.

6.4 Test for polarizing axis deviation

6.4.1 Test apparatus

Cut a circular polarizer with a plane of known transmission into two sub-lenses to give planes of transmission at a 3° angle about the horizontal, or the prescribed axis. Rotate one of the sub-lenses

by 180°, and the two halves of the polarizers shall be joined together and mounted to be a complete polarizer. The line of the join shall be the horizontal, or the prescribed axis. This is the split-field polarizers. The polarizers shall be capable of being rotated by means of a lever carrying a corresponding pointer. Behind the pointer is a horizontal scale to display the axis of the plane of transmission. The pointer transverses a scale calibrated in degrees left or right of zero. When the pointer points to the zero position, the joined line of the split-field polarizers shall be horizontal.The split-field polarizers shall be illuminated from behind by a diffused light source (see Figure 1).



Key
1 scales
2 top register bar
3 split-field polarizers
4 bottom register bar
5 split-field rotation lever (pointer)
6 side view

Figure 1　Apparatus for the determination of the plane of transmission

6.4.2　Test procedure

Mount the spectacles for driving in front of the split-field polarizers and the light source, with the front towards the split-field polarizers. Adjust the top and bottom register bar and the spectacles for driving, and ensure that the split-field polarizers appears in the centre field of view of the spectacles for driving, and the spectacles for driving shall be in the wearing position.
Move the lever and observe through the spectacles for driving until the top and bottom halves of the illuminated split field appear of equal luminance when viewed through the filter. It shows that the plane of transmission of the spectacles for driving under test coincides with the split-field polarizers,
Read off the pointer position to give the deviation in degrees. This is the angular deviation between the actual plane of transmission of the filter and its prescribed orientation of plane of transmission.

7　Inspection rules

7.1 The production plant can treat the daily output, shift output or machine output as one batch; receiver can regard goods received at one time as one batch. Products shall be carried out for inspection in accordance with the requirement in GB/T 2828.1.

7.2 General inspection level II shall be used to determine acceptance for item 1～ 7 in Table 3, and the acceptance quality limit (AQL) is 4.0. If one of the items 8～11 in Table 2 fails, the lot is non-conforming.

7.3 If one of the items fails, the lot is non-conforming. For any other special requirements, they can be negotiated separately between the prescriber and the supplier.

Table 3 Test item list

Item	Identification of test	Terms in the document
1	Surface quality	5.1
2	Refractive power	5.2
3	Prism imbalance (relative prism error)	5.3
4	Assembly quality	5.4
5	Endurance	5.5
6	Bridge deformation and lens retention characteristics	5.6
7	Coating quality	5.7
8	Transmittance properties	5.8
9	Impact resistance	5.9
10	Inflammability	5.10
11	Polarizing axis deviation	5.11

8 Identification, package, transportation and storage

8.1 Identification

Each product shall be provided with at least the following information, which can be indicated on the frame, label, product package or any combination of the three:

a) product name, trademark;
b) name and address of manufacturer or supplier;
c) the applied standards and quality certificate;
d) category;
e) restrictions of use, such as a warning of "only for daytime use", etc.;
f) instructions for care and cleaning (if necessary);
g) content stipulated by laws and regulations (if necessary).

8.2 Package, transportation and storage

The outer package shall indicate the name and address of manufacturer, product name, quantity, etc. It shall be handled gently during transportation.

The storage environment shall be at suitable humidity and ventilated。