



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

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**Rear-marking plates for vehicles and their trailers [including
MODIFICATION 1 2015-XG]**

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Table of Contents

Foreword	3
1 Scope	5
2 Normative references	5
3 Terms and definitions	6
4 Different types of rear-marking plates	9
5 Requirements	9
6 Test methods	13
7 Inspection rules	16
Annex A (Informative) Optical coordinate system diagram	19
Annex B (Normative) Rear-marking plate layout example	21
Annex C (Normative) Test sequence for SMV rear-marking plate	24
Annex D (Normative) Test sequence for rear-marking plates for heavy and long vehicles	26
Annex E (Normative) Installation regulations for SMV rear-marking plate	28
Annex F (normative) Installation regulations for rear-marking plates for heavy and long vehicles	29
Amendment No. 1 of National Standard	31

1 Scope

This Standard specifies technical requirements, test methods and inspection rules for rear-marking plates that are to increase the visibility of heavy and long vehicles, slow-moving vehicles and their trailers.

This Standard is applicable to.

a) heavy and long vehicles including.

- 1) articulated Class-II and Class-III Category-M vehicles;
- 2) Category-N3 vehicles except semi-trailer;
- 3) Category-O1, O2 and O3 vehicles over 8.0m in length;
- 4) as well as Category-O4 vehicles.

b) slow-moving vehicle. for structural reasons, the Category-M, N, O vehicles with the highest design speed of no more than 40km/h.

2 Normative references

The following standards contain the provisions which, through reference in this Standard, constitute the provisions of this Standard. For dated references, subsequent amendments (excluding corrections) or revisions do not apply to this Standard. However, the parties who enter into agreement based on this Standard are encouraged to investigate whether the latest versions of these documents are applicable. For undated reference documents, the latest versions apply to this Standard.

GB/T 3978, Textiles - Tests for colour fastness Colour fastness to artificial light. Xenon arc fading lamp test

GB 4785, Prescription for installation of the external lighting and light signaling devices for motor vehicles and their trailers

GB/T 8427-1998, Textiles-Tests for colour fastness Colour fastness to artificial light. Xenon arc fading lamp test (eqv ISO 105-B02.1994)

GB/T 10485-2007, Road vehicles - Lighting and light-signaling devices -

3.2.2 SMV rear-marking plate (class 2)

a rear-marking plate that only has retroreflective material or device, the shape is a triangle with a truncated corner, for slow-moving vehicles

3.2.3 rear-marking plate for heavy vehicles (class 1)

a rear-marking plate that is alternately composed of red fluorescent material and yellow retroreflective material, the shape is a rectangle

3.2.4 rear-marking plate for long vehicles (class 2)

a rear-marking plate that the frame is made of red fluorescent material, the center is made of yellow retroreflective material, the shape is rectangular

3.2.5 rear-marking plate for heavy vehicles (class 3)

a rear-marking plate that is alternately composed of red and yellow retroreflective materials, the shape is rectangular

3.2.6 rear-marking plate for long vehicles (class 4)

a rear-marking plate that the frame is made up of red retroreflective material, and the center is made up of yellow retroreflective material, the shape is rectangular

3.3 Geometric definition

NOTE. See Figure A.1 of Annex A.

3.3.1 reference centre

retrieving a point on or near the reflective surface as the center of the performance of the specified device

3.3.2 illumination axis

a connection line between the reference center and the light source

3.3.3 observation axis

a connection line between the reference center and the photometric probe

3.3.4 observation angle (symbol α)

an angle between the illumination axis and the viewing axis, usually positive;

for retroreflection, the viewing angle is limited to small angles; the maximum range is $0 \leq \alpha \leq 80^\circ$ luminous intensity I of the returning reflection region from the observation direction, Illuminance that is perpendicular to the direction of the incident light at the position of the return reflecting surface E as well as the sample unit is given by illuminated area A , i.e., $R' = I / (E \cdot A)$; the unit of the coefficient R' is $\text{cd}/(\text{lx} \cdot \text{m}^2)$

3.4.2 angular diameter of the retroreflector sample (symbol η)

reverberating the maximum size of the sample to the center of the illumination source, or an angle to the center of the receiver

3.4.3 luminance factor

the ratio of the brightness of the object being studied T_O to the brightness of the ideal diffuser, under the same illumination and observation conditions

4 Different types of rear-marking plates

Rear-marking plates with differences in the following main aspects.

- a) trade name or trademark;
- b) characteristics of retroreflective materials;
- c) characteristics of fluorescent materials;
- d) parts that affect the performance of retroreflective materials or devices.

However, the rear-marking plates used for heavy and long vehicles are different in shape and size and do not constitute different types.

5.1.1 The rear-marking plate shall maintain its proper function under normal

conditions of use and work continuously. In addition, there shall be no defects in design or manufacturing that affect its function.

5.1.2 The components of the rear-marking plate shall not be easily

disassembled.

5.1.3 The way the rear-marking plate is fixed to the rear of the vehicle shall be

stable and durable, for example using screws or riveting.

5.1.4 The outer surface of the rear-marking plate shall be easy to clean. The

surface shall not be rough. Any protrusions shall have no hindrance to cleaning.

- Bond strength test (for bonding materials);
- Water resistance test;
- Collision resistance test (except plastic three-corner reflector);
- Cleaning resistance test;
- Temperature resistance test;
- Ruggedness test.

6.1 General requirements as well as shape, size and structural tests

The provisions of 5.1 and 5.2 are determined visually.

6.2.1 Visually compare the standard colorimetric template and the testing

sample unit or sample block under the illumination that is equivalent to a standard light source specified in GB/T 3978. Qualitatively determine whether it meets the requirements of light color.

6.2.2 If there is any objection to the qualitative determination by visual

comparison, take the most objectionable sample unit. Determine the chromaticity coordinates using the quantitative method according to the requirements of 5.3 to determine whether it meets the requirements.