

ICS 43.040.20
CCS T 38



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

GB 23254-2009

**Retro-reflective markings for trucks and trailers
(English Translation)**

Issued on: March 6, 2009

Implemented on: July 1, 2009

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine of the People's Republic of China**

Table of Contents

Foreword...	3
1 Scope...	4
2 Normative references...	4
3 Terms and definitions...	5
4 Requirements...	5
5 Test methods...	12
6 Inspection rules...	17
7 Packaging and marking...	19

1 Scope

This Standard specifies the requirements (including material requirements and attaching requirements), test methods, inspection rules, packaging, marking and storage of retro-reflective markings of carriage.

This Standard applies to trucks and trailers and is not applicable to vehicles that transport explosives and highly toxic chemicals on the road.

2 Normative references

The following documents contain the provisions which, through reference in this

Standard, become the provisions of this Standard. For dated references, their subsequent amendments (excluding corrigendum) 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 2423.17 Environmental testing for electric and electronic products -

Part 2. Test method - Test Ka. Salt mist (GB/T 2423.17-2008, IEC 60068-2-

11.1981, Basic environmental testing procedures - Part 2. Tests - Test Ka.

Salt mist, IDT)

GB/T 3681 Plastics - Test method of exposure to weathering (GB/T 3681-

2000, neq ISO 877.1994)

GB/T 3730.1 Motor vehicles and trailers - Types - Terms and definitions

GB/T 3978 Standard illuminants and geometric conditions

GB/T 3979 Methods for the measurement of object color

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

GB 11564 Retro-reflector device for motor vehicles

GB/T 18833-2002 Retro-reflective sheeting for road traffic signs

3 Terms and definitions

For the purpose of this Standard, the terms and definitions defined in GB/T

3730.1, GB 11564 and GB/T 18833-2002 and the following apply.

3.1

retro-reflective markings of carriage

A combination of retro-reflective materials that are attached or affixed to the surface of carriage to enhance the recognizability of the vehicle.

3.2

luminance factor

A ratio of the luminance of the sample to the luminance of the ideal diffuser under the same illumination and viewing conditions.

4.1.1 Classification

According to different materials of retro-reflective markings of carriage, it is divided into retro-reflector device type retro-reflective markings of carriage (hereinafter referred to as retro-reflector device type) and retro-reflective sheeting type retro-reflective markings of carriage (hereinafter referred to as retro-reflective sheeting type).

According to different coefficients of retroreflection, retro-reflective sheeting is classified into Class I and Class II.

4.1.2 Retro-reflector device type

Retro-reflector device consists of white and red units, and all the performances shall meet the requirements of Category IV A in GB 11564.

4.1.3.1 Shape and appearance requirements

Retro-reflective sheeting consists of strips of white and red units.

The white unit of retro-reflective sheeting shall be printed, watermarked, laser-

Arbitrarily select 5 red units and 5 white units, wherein the coefficient of retroreflection R' of any one unit of the same color shall not be greater than

120 % of the average value of the coefficient of retroreflection of all the units of the same color, and shall not be less than 80 % of the average value of the coefficient of retroreflection of all the units.

4.1.3.4.3 Retroreflection in wet state

Under the condition that the observation angle is $12'$ and the entrance angle is

-4° , the coefficient of retroreflection R' of retro-reflective sheeting in wet state shall not be less than 80 % of the values specified in Table 2.

4.1.3.5 Weather resistance

After the natural exposure test or the artificial climate accelerated aging test, the surface of retro-reflective sheeting shall have no obvious cracks, nicks, dents, bubbles, wrinkles, erosion, peeling, chalking or deformation, no shrinkage or expansion of more than 1 mm from either side, and no degumming from the edge of the bottom plate. Under the condition where the observation angle is $12'$ and the entrance angle is -4° , the coefficient of retroreflection R' shall not be less than 70 % of the corresponding value in Table 2, and the chromaticity coordinates shall still be within the range specified in Table 1.

When the results of the natural exposure test conflict with the results of the artificial climate accelerated aging test, the results of the natural exposure test shall prevail.

4.1.3.6 Adhesion performance

After the adhesion test, the 180° peel strength of retro-reflective sheeting backing shall not be less than 25 N.

4.1.3.7 Salt mist corrosion resistance

After the salt mist test, the retro-reflective sheeting shall not have signs of softening, bubbles, wrinkles, dissolution, discoloration or erosion. Under the condition where the observation angle is $12'$ and the entrance angle is -4° , the coefficient of retroreflection R' shall not be less than 70 % of the corresponding value in Table 2, and the 180° peel strength of the backing measured according to the method specified in 5.2.7 shall not be less than 20 N.

4.1.3.8 Solvent resistance

After the solvent resistance test, the surface of the retro-reflective sheeting shall not have signs of softening, wrinkles, bubbles, discoloration, cracking or surface edge dissolution. Under the condition where the observation angle is

12' and the entrance angle is -4° , the coefficient of retroreflection R' shall not device for motor vehicles installed as required by GB 4785.

4.2.1.4 Different types or classes of retro-reflective markings of carriage may be installed or attached to the rear and sides of the carriage, but the rear retro- reflective markings of carriage and side retro-reflective markings of carriage shall be selected from the same type or class of retro-reflective markings of carriage.

4.2.1.5 When installing or attaching, the retro-reflective markings on the rear

and side of carriage shall start with a white unit and end with a white unit.

4.2.1.6 After the vehicle is installed or attached with retro-reflective markings of carriage, it shall not affect the performance of other lighting and signalling devices of the vehicle.

4.2.1.7 After the vehicle is installed or attached with retro-reflective markings of carriage, it shall not drill or slot on the retro-reflective markings of carriage.

4.2.2 Installation and attaching requirements for rear retro-reflective

markings of carriage

4.2.2.1 Basic requirements

Under the conditions allowed by the structure, the rear retro-reflective markings of carriage shall be vertical symmetrically distributed and reflect the width and contour of the rear of the vehicle as much as possible. The horizontal installation or attaching total length (excluding the spacing) shall not be less than 80 % of the width of the rear of the vehicle. After meeting the above requirements, the van truck shall use retro-reflective markings of carriage to outline the rear of the carriage. When the attaching area of other vehicles does not meet the specified requirements, the width of the rear of the vehicle shall be reflected first, and then the method of contouring shall be used to compensate.

The height of the retro-reflective markings of carriage from the ground is at least

380 mm.

4.2.2.2 Retro-reflective sheeting type

When Class I retro-reflective sheeting is used, the sum of its area and the area of rear retro-reflector device shall not be less than 0.1 m²; when Class II retro- reflective sheeting is used, the sum of its area and the area of rear retro- reflector device shall not be less than 0.2 m².

The attaching is allowed to be interrupted, but the length of each continuous section shall not be less than 300 mm, and shall contain at least respectively one red and white unit of retro-reflective markings of carriage. The red and side of the carriage to be blocked.