



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

GB/T 5137.4-2020

**Test methods of safety glazing materials used on road vehicles
- Part 4: Determination of solar characteristic**

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Foreword

GB/T 5137 "Test methods of safety glazing materials used on road vehicles" is divided into 5 parts.

- Part 1.Mechanical properties tests;
- Part 2.Optical properties tests;
- Part 3.Radiation, high temperature, humidity, fire and simulated weathering resistance tests;
- Part 4.Determination of solar characteristic;
- Part 5.Resistant-to-chemical and resistant-to-temperature changes test.

This Part is Part 4 of GB/T 5137.

This Part is drafted in accordance with the rules given in GB/T 1.1-2009.

This Part replaces GB/T 5137.4-2001 "Road vehicles - Safety glazing materials

- Method for the determination of solar transmittance". Compared with GB/T 5137.4-2001, in addition to editorial changes, the main technical changes of this Part are as follows.

- Modify the scope (see Clause 1; Clause 1 of the 2001 edition);
- Modify "Reference standards" to "Normative references"; ADD new

references (see Clause 2; Clause 2 of the 2001 edition);

- Delete some definitions in the previous standard (see Clause 3; Clause 3 of the 2001 edition);
- ADD requirements for environmental conditions (see Clause 4);
- Delete "Calculation convention B" in the previous standard (see 4.4.2 of the

2001 edition);

- ADD the calculation method of solar ultraviolet transmittance when the air mass is 1.5 (see 8.1);
- ADD the calculation method of solar infrared direct transmittance (see 8.6);
- ADD the calculation method of solar infrared direct reflectance (see 8.7);
- ADD the calculation method of solar infrared direct absorptance (see 8.8);
- ADD the calculation method of total solar infrared thermal energy transmittance (see 8.10).

This Part uses the redraft law to modify and adopt ISO 13837.2008 "Road vehicles - Safety glazing materials - Method for the determination of solar transmittance".

Compared with ISO 13837.2008, this Part has a lot of adjustments in structure. Annex A lists the comparison table for clause-subclause number of this Part and ISO 13837.2008.

There are technical differences between this Part and ISO 13837.2008. The clauses involved in these differences have been marked by a vertical single line (|) at the blank of the outer margin. Annex B gives a table of corresponding technical differences and their causes.

This Part makes the following editorial changes.

- CHANGE the standard name.

This Part was proposed by Ministry of Industry and Information Technology of the PRC.

This Part shall be under the jurisdiction of National Technical Committee of Auto

Standardization (SAC/TC 114).

Drafting organizations of this Part. China Building Material Test & Certification Group Co., Ltd., Fuyao Glass Industry Group Co., Ltd., Jiangsu Tiemao Glass Co., Ltd., Xinyi Energy-smart Glass (Sichuan) Co., Ltd., Kangde Xin Optical Film Materials (Shanghai) Co., Ltd., Xinyi Automobile Glass (Shenzhen) Co., Ltd., Dongguan Benson Automobile Glass Co., Ltd., National Safety Glass and Quartz Glass Quality Supervision and Inspection Center.

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The previous editions of the standard replaced by this Part were released as follows.

- GB/T 5137.4-2001.

Test methods of safety glazing materials used on road vehicles - Part 4. Determination of solar characteristic

1 Scope

This Part of GB/T 5137 specifies the method for determination of solar characteristic of safety glazing materials used on road vehicles, including solar ultraviolet transmittance, solar direct transmittance, solar direct reflectance, solar direct absorptance, solar infrared direct transmittance, solar infrared direct reflectance, solar infrared direct absorptance, total solar energy transmittance, total solar infrared thermal energy transmittance.

2 Normative references

The following documents are indispensable for the application of this document.

For the dated references, only the editions with the dates indicated are applicable to this document. For the undated references, the latest edition (including all the amendments) are applicable to this document.

3 Terms and definitions

The terms and definitions defined in QC/T 1119 and the following ones apply to this document.

The ratio of the radiant flux transmitted through the safety glazing material to the incident radiant flux under specific geometric and spectral conditions.

4 Environmental conditions

Unless otherwise specified, the test shall be conducted under the following environmental conditions.

5 Test apparatus

A spectrophotometer with integrating sphere. The range wavelength shall include at least 300 nm~2500 nm.

6 Sample

Flat test pieces; or it is possible to cut the flattest part of curved products.

7 Test procedure

According to requirements of the equipment manufacturer, calibrate the instrument. PUT in a clean sample. The sample is perpendicular to the incident beam.

8 Data processing

The secondary thermal transmission coefficient q of single-layer glass is calculated according to formula (11).

9 Expression of results

The report shall reflect the thickness, type, and structure of the sample. If applicable, it shall also include the direction of the curved surface and the instrument used.

Annex A