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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 5137.1-2020

Replacing GB/T 5137.1-2002

Test methods of safety glazing materials used on road vehicles - Part 1: Mechanical properties tests

汽　安全玻璃试验方法 第 1 部分：力学性能试验

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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 4: Determination of solar characteristic;

- Part 5: Resistant-to-chemical and resistant-to-temperature changes test.

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

This Part replaces GB/T 5137.1-2002 "Test methods of safety glazing materials used on road vehicles - Part 1: Mechanical properties tests". Compared with GB/T 5137.1- 2002, in addition to editorial changes, the main technical changes of this Part are as follows:

- ADD the placement requirements for plastic materials before testing (see Table 1

- ADD the impact height requirement to the steel ball test (see Table 2 of 5.4.1, resistance test (see 7.2.1; 7.2.2 of the 2002 edition);

- ADD head-form impact test with deceleration measurement (see 9.2);

- ADD cross-cut test (see Clause 10);

- ADD flexibility and folding test (see Clause 11).

This Part uses the redraft law to modify and adopt ISO 3537:2015 "Road vehicles - Safety glazing materials - Mechanical tests".

Compared with ISO 3537:2015, this Part has a lot of adjustments in structure. Annex A lists the comparison table for clause-subclause number of this Part and ISO 3537:2015.

There are technical differences between this Part and ISO 3537:2015. 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 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., Shentong Science and Technology Group Co., Ltd., AGC Automotive (China) Co., Ltd., Xinyi Automobile Glass (Shenzhen) Co., Ltd., Covestro (Shanghai) Management Co., Ltd., Momentive Performance Materials (Shanghai) Trading Co., Ltd., Kangde Xin Optical Film

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

1 Scope

This Part of GB/T 5137 specifies the test methods for impact resistance test, penetration resistance test, abrasion resistance test, fragmentation test, headform impact test, cross-cut test, and flexibility and folding test of safety glazing materials used on road vehicles.

This Part applies to the tests of safety glazing materials used on road vehicles.

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

4 Test conditions

Unless otherwise specified, the tests shall be carried out under the following ambient conditions:

5 Impact resistance test (227 g steel ball test)

5.1 Test purpose

5.2 Test devices and apparatus

5.2.1 Steel ball

5.2.2 Means for dropping

Means for dropping the ball freely from a height to be specified. When the impact height is less than or equal to 6 m, the impact point of the steel ball shall be within a circle with a

radius of 25 mm at the center of the sample. When the impact height is greater than 6 m, the impact point of the steel ball shall be within a circle with a radius of 50 mm at the center of the sample.

5.2.3 Sample supporting fixture

It consists of three parts: the upper frame, the lower frame, and the steel box; which are all square, as shown in Figure 1. Two steel frames; the wall thickness is 15 mm; the height is 23 mm. The contact surface is machined and attached with a rubber gasket, with a thickness of 3 mm±0.5 mm, a width of 15 mm±1 mm, and a hardness of Shore A (50±5). The sample is located between the upper and lower frames.

The lower frame is above the steel box. The steel box is welded by 12 mm thick steel bottom sheet and 10 mm thick side sheet; is placed on the ground, which is cushioned with a rubber sheet with thickness 3 mm±0.5 mm and hardness Shore A (50±5).

5.2.4 Balance

Balance with an accuracy of at least 0.1 g.

5.3 Sample

USE the special flat test piece prepared under the same material and process conditions as the product or the test piece cut from the flattest part of the product AS the sample. The size is mm× mm. When applicable, the product can also be a sample. See Table 1 for sample pretreatment requirements.

5.4 Test procedure

5.4.1 Impact height

The impact height of different samples is shown in Table 2.

The impact height is calculated by difference.

When the impact height is <4000 mm, the tolerance is (0, +5)mm. When ≥4000 mm, the tolerance is (0, +25)mm.

5.4.2 Time interval control

5.4.3 Test steps

6 Penetration resistance test (2260 g steel ball test)

6.1 Test purpose

Evaluation of the penetration resistance of the safety glazing material.