



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

GB/T 3512-2014

**Rubber, vulcanized or thermoplastic -- Accelerated ageing and
heat resistance tests -- Air-oven method**

Issued on: December 22, 2014

Implemented on: June 1, 2015

Issued by: AQSIQ; SAC

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Foreword

This Standard is drafted according to the rules provided in GB/T 1.1-2009.

This Standard replaces GB/T 3512-2001 Rubber, vulcanized or thermoplastic - Accelerated ageing and heat resistance tests - Air-oven method; compared with GB/T 3512-2001, the main technical changes are as follows.

- Add test method of rubber tensile performance ISO 37 and test method of rubber hardness ISO 48 (as shown in 3.1 of this edition);
- Add test method of multicell ageing oven, cabinet type ageing oven and forced ventilation ageing oven and its wind speed (as shown in 4.1.2, 4.1.3, 4.1.4 of this edition);
- Add provision for equipment verification (as shown in chapter 5 of this edition);
- Use ISO 23529 to replace GB/T 2941 (as shown in chapter 8 of 2001 edition);
- Add results of precision test (as shown in chapter 11 of this edition; chapter 10 of

2001 edition).

Using translation method, this Standard equivalently adopts ISO 188.2011 Vulcanized rubber or thermoplastic elastomer hot air - Accelerated aging heat resistance test. The Chinese documents, in this Standard, which have corresponding relationship with the normative international documents are as follows.

- GB/T 528-2009 Rubber, vulcanized or thermoplastic - Determination of tensile stress-strain properties (ISO 37.2005, IDT);
- GB/T 2941-2006 Rubber - General procedures for preparing and conditioning test pieces for physical test methods (ISO 23529.2004, IDT);
- GB/T 6031-1998 Rubber, vulcanized or thermoplastic - Determination of hardness (hardness between 10 IRHD and 100 IRHD) (idt ISO 48.1994).

This Standard was proposed by China Petroleum and Chemical Industry Association. This Standard shall be under the jurisdiction of Branch of National Rubber and Rubber Goods Technical Committee for Standardization General Test Method (SAC/TC 35/SC 2). Main drafting organizations of this Standard. Guangzhou Synthetic Material Research Institute Co., Ltd., National Rubber and Latex Products Quality Supervision Test Center, Fengshen Tyre Co., Ltd., Cooper Chengshan (Shandong province) Co., Ltd., Qingdao Yi Kesi New Material Co., Ltd., Shandong Bayi Tyre Manufacture Co., Ltd., Jiangsu Mingzhu Test Machinery Co., Ltd., Beijing Rubber Industry Research and Design Institute, Guizhou Tyre Co., Ltd.

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The historical versions replaced by this Standard are as follows.

- GB/T 3512-1983 (1989), GB/T 3512-2001.

1 Scope

This Standard specifies accelerated ageing or heat resistance tests on vulcanized or thermoplastic rubbers. Two methods are given.

2 Normative references

The articles contained in the following documents have become part of this document when they are quoted herein. For the dated documents so quoted, all the modifications (including all corrections) or revisions made thereafter shall be applicable to this document.

GB/T 25269-2010 Rubber - Guide to the calibration of test equipment (ISO 18899.2004, IDT)

3 Principle

Test pieces are subjected to controlled deterioration by air at an elevated temperature and at atmospheric pressure, after which specified properties are measured and compared with those of unaged test pieces.

4 Apparatus

The oven shall be of such a size that the total volume of the test pieces does not exceed

10 % of the free space in the oven. Provision shall be made for suspending test pieces so

that they are at least 10 mm from each other and, in cabinet ovens and ovens with forced air circulation, at least 50 mm from the sides of the oven.

5 Calibration

The test apparatus shall be calibrated in accordance with Annex D.

6 Test pieces

It is recommended that the accelerated ageing or heat resistance test be carried out on test pieces prepared and conditioned as required for the appropriate property tests, and not on complete products or sample sheets, and that their form be such that no mechanical, chemical or heat treatment will be required after ageing.

7 Time interval between vulcanization and testing

Unless otherwise specified for technical reasons, the following requirements shall be observed.

8 Ageing conditions (duration and temperature)

The period required to obtain a given degree of deterioration of the test pieces will depend upon the type of rubber under examination.

9 Procedure

Heat the oven to the operating temperature and place the test pieces in it.

10 Expression of results

The results shall be expressed in accordance with the International Standard for the appropriate property tests.

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