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

GB/T 9869.2-2025

Replacing GB/T 9869-2014

**Rubber - Measurement of vulcanization characteristics using
curemeters - Part 2: Oscillating disc curemeter
(English Translation)**

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document is Part 2 of GB/T 9869 "Rubber - Determination of vulcanization characteristics using a vulcanizer". GB/T 9869 has been published as follows part.

--- Part 1: Introduction;

--- Part 2: Disc oscillating rheometer.

This document replaces GB/T 9869-2014 "Rubber compounds - Determination of vulcanization characteristics - Disc oscillation vulcanometer method" and is in line with GB/T Compared with 9869-2014, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

a) The descriptions of torque and compound stiffness have been deleted (see 4.1 of GB/T 9869-2014);

- b) The vulcanization curve type diagram (see 4.2 of GB/T 9869-2014) has been deleted;
- c) Deleted the detailed description of the parameters obtained from the relationship between torque and time of the vulcanization curve (see GB/T 9869-2014 4.3);
- d) Added inspection of mold cavity shape (see 5.2);
- e) The recording accuracy of torque has been changed (see 5.6.2, 5.6.2 of GB/T 9869-2014);
- f) The calibration content for torque sensors and recorders has been changed (see Chapter 6, Chapter 6 of GB/T 9869-2014);
- g) Added requirements for sample conditioning (see Chapter 9);
- h) Added calibration specifications (see Appendix A).

This document is equivalent to ISO 6502-2:2018 "Rubber - Determination of vulcanization characteristics by vulcanizer - Part 2: Oscillating disk vulcanizer".

Introduction

There are many types of existing vulcanizers, and their appearance and structure are different. With the continuous improvement of the level of vulcanization testing technology, the current standards have been at the same time, in order to be consistent with the ISO 6502 series of standards, it is necessary to revise the current standards and update the technical content.

GB/T 9869 "Determination of vulcanization characteristics of rubber using vulcanizer" aims to provide guidance for the selection and use of vulcanizers.

The test method for determining the vulcanization characteristics of rubber using a vulcanizer is intended to consist of three parts.

--- Part 1: Introduction. The purpose is to provide a general introduction and guidance for the design and use of vulcanizers.

--- Part 2: Disc oscillating rheometer. The purpose is to clarify the technical requirements that the disc oscillating rheometer must meet and specify the use of disc Method for determining the vulcanization characteristics of rubber using an oscillating vulcanizer.

--- Part 3: Rotorless Rheometer. The purpose is to clarify the technical requirements that rotorless rheometer must meet, and to specify the use of rotorless rheometer.

Method for determining the vulcanization characteristics of rubber compounds using a chemical analyzer.

The correspondence between this series of files and the previous version of the files is as follows.

---GB/T 9869.1.GB/T 25268-2010;

---GB/T 9869.2.GB/T 9869-2014;

---GB/T 9869.3.GB/T 16584-1996.

Determination of vulcanization characteristics of rubber using a vulcanizer Part 2: Disc oscillating rheometer Warning 1---People who use this document should have practical experience in regular laboratory work. This document does not indicate all possible safety the user is responsible for taking appropriate safety and health measures and ensuring that the conditions stipulated by relevant national laws and regulations are met.

Warning 2 - Some of the steps specified in this document may involve the use or generation of certain wastes, which may cause harm to the local environment.

Appropriate safe operation and waste disposal terms after use should be specified in the relevant documents.

1 Scope

This document describes the method for determining the vulcanization characteristics of rubber compounds using a disk oscillating vulcanimeter.

ISO 6502-1.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document.

For referenced documents without a date, only the latest version (including all amendments) applies to this document.

This document.

GB/T 9869.1-2025 Rubber vulcanizate for the determination of vulcanization characteristics Part 1: Introduction (GB/T 9869.1-2025, ISO 6502-1:2018, IDT) Note. GB/T 25269-2010 Guide to calibration of rubber testing equipment (ISO 18899:2004, IDT)

3 Terms and Definitions

The terms and definitions defined in GB/T 9869.1-2025 apply to this document.

4 Principles

4.1

Place the rubber sample in a closed mold cavity with a specified initial pressure and

maintained at the vulcanization temperature.

The disk oscillates with a small oscillating amplitude. The disk oscillation causes shear strain on the sample. The torque of the disk oscillation depends on the stiffness of the rubber compound (shear Modulus). The torque is automatically recorded graphically as a function of time.

4.2

As the vulcanization progresses, the stiffness of the rubber specimen gradually increases. When the recorded torque rises to a stable value or a maximum value, the vulcanization is obtained.

Curve (see GB/T 9869.1-2025). If the torque continues to rise, it is considered that vulcanization is not completed within the given time.

The time values obtained depend on the test temperature and the properties of the rubber compound.

4.3

The parameter $M = f(t)$ can be obtained from the recorded torque versus time vulcanization curve.

Given in.