

ICS 83.060

CCS G 40



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

GB/T 1232.1-2016

**Rubber, unvulcanized -- Determinations using a shearing-disc
viscometer -- Part 1: Determination of Mooney viscosity
(English Translation)**

Issued on: October 13, 2016

Implemented on: May 1, 2017

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine**

Table of Contents

Foreword...	3
1 Scope...	6
2 Normative References...	6
3 Principle...	7
4 Apparatus...	7
5 Preparation of Test Piece...	12
6 Temperature and Duration of Test...	13
7 Procedure...	13
8 Expression of Results...	14
9 Precision...	14
10 Test Report...	14
Annex A (Informative) Precision Statement...	16
Annex B (Informative) Heat-Stable Film for Mooney Viscosity Measurements...	19
Annex C (Normative) Calibration Schedule...	23

Foreword

GB/T 1232 Rubber, Unvulcanized - Determinations Using a Shearing-Disc Viscometer is supposed to be divided into the following 4 parts.

- Part 1.Determination of Mooney Viscosity;
- Part 2.Determination of Initial Vulcanization Characteristics;
- Part 3.Determination of the Delta Mooney Value for Non-Pigmented, Oil-Extended Emulsion-Polymerized SBR;
- Part 4.Determination of the Mooney Stress-Relaxation Rate.

This Part is Part 1 of GB/T 1232.

This Part was drafted as per the rules specified in GB/T 1.1-2009.

This Part replaced GB/T 1232.1-2000 Rubber, Unvulcanized - Determinations Using a Shearing-Disc Viscometer - Part 1.Determination of Mooney Viscosity. Compared with GB/T 1232.1-2000, the major technical changes of this Part are as follows.

--- Add "ISO 6508-1 (Metallic Materials - Rockwell Hardness Test - Part 1. Test Method)" and "ISO 18899.2013 Rubber - Guide to the Calibration of Test Equipment" in the Normative References (see Clause 2 of this Edition);

--- Delete the diameter requirements for flexible wires used for instrument calibration (see

4.7.3 of 2000 Edition);

--- Modify the thickness of the thermally stable film from "0.03mm" to "0.02mm~0.03mm" (see NOTE of 7.1 of this Edition; NOTE of 7.2 of 2000 Edition);

--- Delete "The measured value is accurate to 0.5 Mooney value, and the test result is rounded-off to an integer" (see 8.2 of 2000 Edition);

--- Delete "The Mooney value of the sample is represented by the arithmetic mean of no less

than two test results. The difference between the two test results shall be no greater than

2 Mooney values" (see 8.3 of 2000 Edition);

--- Update and improve the content of the test report (see Clause 10 of this Edition; Clause

10 of 2000 Edition);

--- Add informative Annex A. Precision Description (see Annex A of this Edition);

--- Add informative Annex B. Thermally stable film for Mooney viscosity test (see Annex B of this Edition);

--- Add normative Annex C. Calibration Schedule (see Annex C of this Edition).

This Part used translation method to equivalently adopt ISO 289-1.2014 Rubber, Unvulcanized

- Determinations Using a Shearing-Disc Viscometer - Part 1. Determination of Mooney Viscosity.

The Chinese documents that have consistent correspondence with the international documents

normatively cited in this Part are as follows.

--- GB/T 230.1-2009 Metallic Materials - Rockwell Hardness Test - Part 1. Test Method (Scales A, B, C, D, E, F, G, H, K, N, T) (ISO 6508-1.2005, MOD);

- GB/T 2941-2006 Rubber - General Procedures for Preparing and Conditioning Test Pieces for Physical Test Methods (ISO 23529.2004, IDT);
- GB/T 6038-2006 Rubber Test Mixes - Preparation, Mixing and Vulcanization - Equipment and Procedures (ISO 2393.1994, MOD);
- GB/T 14838-2009 Rubber and Rubber Products - Determination of Precision for Test Method Standards (ISO/TR 9272-2005, IDT);
- GB/T 15340-2008 Rubber, Raw Natural and Raw Synthetic-Sampling and Further Preparative Procedures (ISO 1795.2000, IDT);
- GB/T 25269-2010 Rubber - Guide to the Calibration of Test Equipment (ISO 18899.2004, IDT).

This Part was proposed by China Petroleum and Chemical Industry Federation.

This Part shall be under the jurisdiction of National Technical Committee on Rubber and Rubber Products of Standardization Administration of China (SAC/TC 35).

Drafting organizations of this Part. Guizhou Tyre Co., Ltd.; Aeolus Tyre Co., Ltd.; Qingdao Doublestar Co., Ltd.; Qingdao Rubber Six Conveyor Belt Co., Ltd.; Xuzhou Armour Rubber Company Ltd.; Triangle Tyre Co., Ltd.; Guangzhou South China Tire & Rubber Co., Ltd.; GITI

Radial Tire (Anhui) Company Ltd.; Shenyang University of Chemical Technology; Beijing Research & Design of Rubber Industry; Jiangsu Xinzhenwei Test Machinery Co., Ltd.; Yangzhou Mingzhu Test Machinery Factory; Electronics Wuxi Liyuan Chemical Equipment Co., Ltd.; Shanghai D&G Measure Instrument Co., Ltd.; and High Speed Railway Testing Instrument (Dongguan) Co., Ltd.

Chief drafting staffs of this Part. Feng Ping, Ren Shaowen, Ma Tiancheng, Guo Fei, Zhang Feng, Yao Feng, Liu Lian, Wei Bangfeng, Ni Shujie, Yan Fujiang, Yang Xiangrong Chen Yutao,

Liu Zhijiang, Hu Yong, Tuo Rui, Lv Ying, Xie Junfang, Li Jing, Shen Kehui, Zhu Muzhi, Hu Jinren, Huang Chengsheng, Qin Xiaofeng, Chen Ruiyi, and Hu Zhizhong.

The historical editions replaced by this Part are as follows.

- GB/T 1232-1992, and GB/T 1232.1-2000.

Rubber, Unvulcanized - Determinations Using a Shearing-Disc

Viscometer - Part 1.Determination of Mooney Viscosity

WARNING -- Persons using this Part should be familiar with normal laboratory practice.

This Part does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any national regulatory conditions.

1 Scope

This Part of GB/T 1232 specifies a method, using a shearing-disc viscometer, for measuring the

Mooney viscosity of uncompounded or compounded rubbers.

This Part is applicable to the determination of Mooney viscosity of uncompounded and compounded rubbers.

2 Normative References

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the

undated documents, only the latest version (including all the amendments) is applicable to this

document.

3 Principle

The torque, which has to be applied under specified conditions in order to rotate a metal disc in

a cylindrical chamber formed from mating dies filled with rubber, is measured. The resistance

offered by the rubber to this rotation is expressed in arbitrary units as the Mooney viscosity of

the test piece.