

ICS 83.040.10

CCS G 40



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

GB/T 18396-2025

Replacing GB/T 18396-2008

**Rubber latex - Determination of surface tension
(English Translation)**

Issued on: April 25, 2025

Implemented on: November 1, 2025

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

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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 replaces GB/T 18396-2008 "Natural rubber latex ring method for the determination of surface tension". Compared with GB/T 18396-2008, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

- a) The scope was changed, the ring method was changed to method A "platinum ring method", B "platinum plate method" was added, and the applicable limits were changed (See Chapter 1, Chapter 1 of the 2008 edition);
- b) Added the "Principle" of Method B (see 4.2) and the instrument "Surface Tensiometer (Wilhelmy type)" (see 6.2);
- c) Added the instrument "Bunsen burner or alcohol burner" (see 6.5);
- d) When the sample viscosity is greater than 200 mPa·s, the determination is based on SH/T 1152 (see 8.1.3.1);
- e) Added the test steps (see 8.2) and result expression (see 9.2) of Method B;
- f) The basis for determining precision has been changed (see Chapter 10, Chapter 9 of the 2008 edition);
- g) The test report has been changed (see Chapter 11, Chapter 10 of the 2008 edition).

This document modifies ISO 1409:2020 "Surface tension of plastic/rubber polymer dispersions, natural latex and synthetic latex".

Determination.

This document has the following structural adjustments compared to ISO 1409:2020.

--- Divide 8.1.4 into "8.1.4.1 Manual surface tension meter determination" and "8.1.4.2 Automatic surface tension meter determination";

--- Added 8.2.4.4 "Automatic surface tension measurement" and added the automatic surface tension measurement method in 8.2.4.3 of ISO 1409:2020.

The content measured by the instrument is moved to this article;

---Appendix A and Appendix B correspond to Appendix B and Appendix A of ISO 1409:2020 respectively.

The technical differences between this document and ISO 1409:2020 and their reasons are as follows.

--- Changed the scope (see Chapter 1, Chapter 1 of ISO 1409:2020), deleted the application to polymer dispersions and method A as the first Select methods to suit my country's technical conditions;

--- Delete the first paragraph of the principle of method A (see 4.1 of ISO 1409:2020) because it does not explain the principle of the test method;

--- ISO 3696 (see 5.1) was replaced by the normative reference GB/T 6682 to adapt to my country's technical conditions;

--- ISO 123 (see Chapter 7) has been replaced by the normative reference GB/T 8290 to

adapt to the provisions of my country on latex sampling;

--- ISO 124 (see 8.1.3.1) was replaced by the normative reference GB/T 8298 to adapt to the determination of total solid content of latex in my country provisions;

--- ISO 705 (see 8.1.3.1) has been replaced by the normative reference GB/T 17821 to adapt to the Chinese requirements for latex density determination Regulation;

--- The normative references NY/T 1037 and SH/T 1152 replaced ISO 1652 (see 8.1.3.1) to adapt to my country's natural Provisions for the determination of apparent viscosity of latex and synthetic latex;

--- ISO 2555 and ISO 3219 (see 8.1.3.1 of ISO 1409:2020) have been deleted as they are not applicable to natural rubber latex and synthetic Determination of apparent viscosity of latex;

--- Added provisions for determining the maximum measurement time (see Table 1) to facilitate the use of this document.

The following editorial changes were made to this document.

--- In order to coordinate with the existing standards, the name of the document is changed to "Determination of Surface Tension of Latex";

--- Added "Warning";

--- Change the explanatory description about the effect of instrument contamination on test results to "Note" (see 8.1.1);

--- Added a note that more reliable results can be obtained by using an automatic surface tension meter (see 8.1.4.2 and 8.2.4.4);

--- Deleted the footnote on latex abbreviations (see Table 1 of ISO 1409:2020);

--- Changed the precision of method A (see Appendix B).

1 Scope

This document describes two methods for determining the surface tension of natural and synthetic latex.

---Method A. Platinum ring method (DuNoüy ring method);

---Method B. Platinum plate method (Wilhelmy plate method).

Method A is applicable to natural latex and synthetic latex with a viscosity of less than 200 mPa·s.

Method B is applicable to natural latex and synthetic latex that do not contain cationic surfactants.

Method A and Method B are also applicable to pre-vulcanized latex and compounded latex.

2 Normative references

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

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

GB/T 6682 Specifications and test methods for water used in analytical laboratories (GB/T 6682-2008, ISO 3696:1987, MOD) GB/T 8290 Latex Sampling (GB/T 8290-2021, ISO 123:2001, MOD) GB/T 8298 Determination of total solid content of latex (GB/T 8298-2017, ISO 124:2014, MOD) GB/T 17821 Determination of density of latex at 5°C to 40°C (GB/T 17821-2008, ISO 705:1994, IDT) NY/T 1037 Determination of apparent viscosity of natural rubber latex - Rotational viscometer method (NY/T 1037-2016, ISO 1652.

2011,MOD)

SH/T 1152 Determination of apparent viscosity of synthetic rubber latex (SH/T 1152-2014, ISO 1652:2011, MOD)

3 Terms and definitions

There are no terms or definitions that require definition in this document.

4.1 Method A

A thin horizontal wire loop suspended from a "DuNoüy" type tensiometer is dipped into the latex to be tested and then slowly pulled out.

The maximum force required before the ring leaves the latex surface is measured using a torsion balance, induction measuring instrument or other appropriate Measuring device determination.

4.2 Method B

When the bottom of the platinum plate suspended on the Wilhelmy surface tension meter is in contact with the latex liquid surface, the platinum plate is affected by the surface tension of the latex.

The instrument applies an upward vertical force to the platinum plate to make the platinum plate reach force balance, and measures the vertical force to measure