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

GB/T 37191-2018

**Raw rubber -- Determination of water content -- Karl Fischer
method**

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard uses the redrafting method to modify the use of ISO 12492.2012 "raw rubber using Karl Fischer method to determine moisture content."

The technical differences between this standard and ISO 12492.2012 and their reasons are as follows.

---About the normative reference documents, this standard has made technical adjustments to adapt to China's technical conditions, adjustments

The situation is reflected in Chapter 2, "Regulatory Citations", and the specific adjustments are as follows.

* Removed ISO 760;

* Replace ISO 1795 with GB/T 15340, which is equivalent to the international standard.

--- Removed the capacity titration method in the principle, the standard specifies the Coulomb titration method, deletes the content of the narrative analysis process (see Chapter 3).

--- Revised the specifications of the standard water sample to facilitate the use of the standard (see 4.1).

---Adjust the alumina to a desiccant and add molecular sieves for standard use (see 4.6).

--- According to the heating method, the tube heating is modified to the bottle type heating, and the heating temperature is modified to facilitate the standard use (see 5.1, Fig. 1).

- Modified the accuracy of the analytical balance to adapt to the technical conditions of our country (see 5.2).
- Modify the sample loader as a vial and add relevant requirements for standard use (see 5.4).
- An oven has been added in the "Instruments" chapter for easy standard use (see 5.5).
- Increased analysis parameters to improve operability (see 8.5.2).
- Modified the analysis steps to improve operability (see 8.5.4~8.5.8).
- Increased the value requirements of the test results, improve the operability of the judgment, and eliminate ambiguity (see 8.5.10).

This standard has made the following editorial changes.

- Modified the standard name;
- Added informational Appendix B "Precision".

This standard was proposed by the China Petroleum and Chemical Industry Federation.

This standard is under the jurisdiction of the National Rubber and Rubber Products Standardization Technical Committee (SAC/TC35).

This standard was drafted. PetroChina Research Institute of China National Petroleum Corporation, China National Petroleum Corporation

Qing Petrochemical Branch.

1 Scope

This standard specifies the method for determining the moisture content of raw rubber and rubber compound by Karl Fischer Coulometric titration.

This standard applies to raw rubber with a moisture content of 0.01% to 1%.

Note. This method is a very sensitive method to exclude the sample from contact with water, including contact with the surrounding environment.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article.

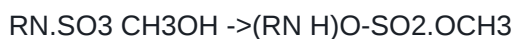
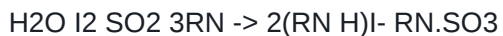
Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 15340 Natural and synthetic raw rubber sampling and its sample preparation method (GB/T 15340-2008, ISO 1795.2000, IDT)

GB/T 25269-2010 Rubber Test Equipment Calibration Guide (ISO 18899.2004, IDT)

3 Principle

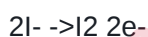
The water in the sample is quantitatively reacted with sulfur dioxide and iodine present in a low alcohol solution such as methanol and organic phase. The reaction equation is as follows.



In the Karl Fischer Coulometric titration method, iodide ion (I⁻) generates iodine (I₂) by electrochemistry, and the generated iodine reacts with water in the sample, according to the above

The reaction is titrated until all of the water has reacted. Calculate the water in the sample by measuring the amount of electricity required to generate I₂ by the following reaction

Sub-content.



According to Faraday's law, the amount of substance that produces iodine is proportional to the amount of electricity consumed. In the above equation, the ratio of I₂ and H₂O reaction is

1.1, that is, 1 mol (18 g) of water corresponds to 2 x 96500 C of electricity, or 1 mg of water is equivalent to 10.72 C of electricity.

4 reagents and materials

Only reagents identified as analytically pure were used in the analysis unless otherwise stated.

4.1 Karl Fischer Coulometric Titration Standard Water. 1.00 mg/g +/- 0.05 mg/g or 0.10 mg/g +/- 0.01 mg/g (traceable).