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

GB/T 8658-2025

Replacing GB/T 8658-1998

**Rubber, raw styrene-butadiene, emulsion-polymerized -
Determination of bound styrene content - Refractive index
method**

(English Translation)

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document supersedes GB/T 8658-1998 "Determination of Styrene Content in Raw Rubber Bonds of Emulsion Polymerized Styrene-Butadiene Rubber".

Compared with GB/T 8658-1998, the main technical changes in the "Light Index Method" are as follows, except for structural adjustments and editorial modifications.

- a) The scope has been changed (see Chapter 1, Chapter 1 of the 1998 edition);
- b) The section on "The Significance of the Measurement" (see Chapter 2 of the 1998 edition) has been deleted;
- c) The description in the "Principles" has been changed (see Chapter 4, Chapter 3 of the 1998 edition);
- d) The word "stent" has been removed (see 5.1 in the 1998 edition);
- e) Added "conical flask" (see 6.1);
- f) Notes using Soxhlet extraction have been changed to be in text (see 6.2 and 7.1, 5.2 and 6.1 in the 1998 edition);
- g) The step of using "thin crepe paper" has been removed (see 5.10, 7.2, and 7.3 in the 1998 edition);
- h) Added "Analytical Balance" (see 6.11);
- i) The normative reference GB/T 15340 has been added, and the sample preparation

procedure has been modified (see 7.1, 6.1 of the 1998 edition);

j) A comparison table of refractive index and bound styrene content for styrene-butadiene rubber has been added (see Chapter 9);

k) "Precision" has been changed (see Chapter 10, 8.2 of the 1998 edition).

This document is modified to adopt ISO 2453:2020 "Determination of styrene content in raw rubber bonds of emulsion-polymerized styrene-butadiene rubber".

Refractive index method.

The technical differences between this document and ISO 2453:2020, and the reasons therefor, are as follows.

---The principle in the "Scope" section (see Chapter 1 of ISO 2453:2020) has been removed to comply with the writing guidelines of GB/T 1.1-2020;

---The significance of the measurement has been removed from the "Principle" section (see Chapter 4 of ISO 2453:2020). The significance of the measurement is not required in the principle section.

illustrate;

---The annotations using Soxhlet extraction have been changed to text (see 6.2 and 7.1, 6.2 and 7.1 of ISO 2453:2020), with optional operations now available as regular.

Paradigm content;

---The steps for using "thin crepe paper" (see ISO 2453:2020 6.10, 8.2 and 8.3) have been removed to conform to domestic practices.

Condition;

---An "analytical balance" (see 6.11) has been added for easier operation;

---ISO 1795 (see 7.1) has been replaced with the normatively referenced GB/T 15340 for ease of use;

---Increased sample drying time (see 7.1) facilitates operation;

---The purpose of sample extraction and drying has been changed to Note (see 7.1) to comply with domestic writing requirements;

---Added requirements for the values of test results (see Chapter 9) for ease of use;

---The test date has been added to the test report (see Chapter 11) to improve the test report.

The following editorial changes have been made to this document.

---Added a note regarding the use of the automatic Abbe refractometer in section 8.3.

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

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

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

1 Scope

This document describes a method for determining the bound styrene content in styrene-butadiene rubber (SBR).

This document applies to the determination of bound styrene content in emulsion-polymerized SBRs. If a suitable thin film for refractive index measurement can be prepared, it will also...

Suitable for oil-extended SBRs that have undergone extraction and emulsion polymerization.

This document does not apply to solution polymerization SBRs.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

GB/T 15340 Sampling and sample preparation methods for natural and synthetic raw rubber (GB/T 15340-2025, ISO 1795:2017, IDT)

3 Terms and Definitions

This document does not contain any terms or definitions that need to be defined.

4 Principles

After extraction and drying with an ethanol-toluene azeotropic solution (ETA), the sample was placed between two aluminum foils and pressed to form a sample with a thickness of no more than 0.5 mm.

The refractive index of the specimen was measured at 25°C, and the amount of bound styrene was determined according to the table comparing the refractive index with the mass fraction of bound styrene.

The amount.

5 Reagents

Unless otherwise specified, use only analytical grade reagents.

5.1

Ethanol-Toluene Azeotropic Mixture (ETA). Mix 7 volumes of anhydrous ethanol with 3 volumes of toluene. Alternatively, 7 volumes of industrial-grade ethanol may be used.

Ethanol was mixed with 3 volumes of toluene, and the mixture was heated to boiling and refluxed for 4 hours with anhydrous calcium oxide. Then, distillation was performed, and the mixture was collected at the boiling point.

Azeotropic distillate above 1°C is used for testing.

5.2

Acidification of ETA. Add 10 mL of concentrated hydrochloric acid (approximately 35% by mass) to a portion of the ETA (5.1), and then add more ETA to bring the volume to the required level.

1000mL.

Note: Acidified ETA is used as a polymer for alum coagulation.

5.3

alpha-Bromonaphthalene.

6 Instruments and Equipment

6.1

Erlenmeyer flask. 400mL~500mL.