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

GB/T 13646-2013

Replacing GB/T 13646-1992

**Rubber -- Determination of bound styrene content --
Spectrophotometric method**

橡胶 结合苯乙烯含量的测定 分光光度法

(English Translation)

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Foreword

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

This standard replaces GB/T 13646-1992 "Rubber - Determination of bound styrene content spectrophotometry." this standard compared with GB/T 13646-1992, the main technical differences are as follows.

- Increasing the test range (1992 Edition Chapter 1, Chapter 1 of this edition);
- Adjust the sampling procedure (see 62, 1992 version 7.1.);
- Modify extract 10mL to 25mL (see 78, 1992 version 7.7.);
- Modify the formula in the letter (see 91, 92, 1992 version 8.1, A.4.);
- The "correction constant determination" into the text (see Chapter 8, 1992 edition of Appendix A);
- To increase the "standard and ISO 5478:2006 as compared to structural changes" (see Appendix A);
- To increase the "standard and ISO 5478:2006 technical differences and reasons" (see Appendix B).

This standard uses redrafted law revision of international standards ISO 5478:2006 "Rubber Determination of bound styrene content of nitrification law".

This standard and ISO 5478:2006 as compared to the structure have more adjustment, given in Appendix A of this standard and ISO 5476:2006's Reg number control list.

This standard and ISO 5478:2006 clause relates to the technical differences compared to already exist in the outside through the vertical position of the blank page Singlet (-) were marked, Appendix B gives a list of corresponding technical differences and their causes.

The standard proposed by China Petroleum and Chemical Industry Association.

This standard by the national Common test methods for rubber and rubber goods Technical

Committee of Standardization Technical Committee (SAC/TC35/SC2) Centralized.

This standard drafting unit. China Petrochemical Research Institute Co., Ltd. Gas Oil, Triangle Tyre Co., Ltd., China Stone Oil and Natural Gas Company Dushanzi Petrochemical Company Institute, National Rubber and Latex Products Quality Supervision and Inspection Center, Qingdao Yike Si New Materials Co., Ltd., Beijing Rubber Industry Research and Design Institute.

1 Scope

This standard specifies the determination of styrene with a spectrophotometer - method butadiene rubber (SBR) styrene content.

This standard applies to styrene homopolymer reinforced styrene - Determination of styrene butadiene rubber content.

Determination of styrene content This standard applies to a styrene content of not more than 50% (by mass) of the block copolymer.

This standard applies to SBR and other polymers (NR, BR, IR and CR) blends vulcanized rubber. If known SBR blend of benzene Ethylene content, and the remaining component styrene-free, you can use this method to estimate the content of SBR rubber blend.

In any other non-absorbent material extracted aromatic specific spectral region, it will interfere with the determination results of this method.

When the rubber compound is insoluble in nitric acid inorganic filler than 5% (mass fraction), lower results obtained by the present method.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references, the latest edition (including any amendments) applies to this document.

GB/T 3516 rubber solvent extraction of the test substance (GB/T 3516-2006, ISO 1407:1992, MOD) GB/T 15340 natural, synthetic rubber raw sampling and sample preparation method (GB/T 15340-2008, ISO 1795:2000, IDT) GB/T 17783 vulcanized rubber sample preparation and chemical test samples (GB/T 17783-1999, ISO 4661-2. 1987, IDT) ISO 4655 reinforced SBR rubber --- --- binding assay overall styrene content (Rubber-Reinforcedstyrene-butadienelatex-Determinationoftotalboundstyrenecontent) Principle 3

3.1 Sample extraction with acetone, with nitration, oxidation of styrene p-nitrobenzoic acid.

3.2 nitrobenzoic acid and extracted with ether.

3.3 with sodium hydroxide solution will nitrobenzoic acid was extracted from ether out, measuring the absorbance in the UV spectral region.

4 Reagents and materials

4.1

Analysis should use analytical reagent and distilled water or equivalent purity.

WARNING. Because the following operation, inevitably there is a possibility that compromise health and safety. Therefore, when using acetic acid and when the ether, should comply with recognized health and safety precautions. Extraction should be in a suitable fume hood, and you want to wear goggles when operating.

Nitric acid 4.2, $\rho = 1.43\text{g/mL}$.

Use fresh nitric acid, nitric acid nitrification Chen effect is poor.

4.3

Sodium hydroxide solution. $c(\text{NaOH}) = 5\text{mol/L}$.

200g of sodium hydroxide dissolved in water and diluted to 1000mL.

4.4

Sodium hydroxide solution. $c(\text{NaOH}) = 0.1\text{mol/L}$.