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

GB 11136-1989

Replacing GB/T 11136-1989

**Determination of bromine index for petroleum hydrocarbons -
Electrometric titration
(English Translation)**

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Foreword

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

Drafting.

This document supersedes GB/T 11136-1989 "Determination of Bromine Index in Petroleum Hydrocarbons (Voltage Titration)" and is consistent with GB/T 11136-1989.

In comparison, aside from structural adjustments and editorial changes, the main technical changes are as follows.

a) The scope of application has been changed (see Chapter 1, Chapter 1 of the 1989 edition);

b) The "dead stop point" potentiometric titrator section has been removed from the instrumentation section, and the "dead stop point" potentiometric titrator section in Appendix A of GB/T 11136-1989 has also been removed.

The circuit diagram for the titrator has been revised, removing the step of determining the bromine index using a "dead stop point" potentiometric titrator (see Chapter 5, 5.1 of the 1989 edition).

8.4 and Appendix A);

c) The preparation of the starch indicator solution has been modified, and mercuric iodide reagent is no longer added (see 6.18, 7.4 of the 1989 edition);

d) The preparation of the titration solvent was changed from "1,1,1-trichloroethane (trichloromethane) and methanol" to "dichloromethane and anhydrous ethanol".

"Alcohol" (see 6.22, 7.2 in the 1989 edition);

e) The volume precision of the standard solution added during the standardization process of potassium bromide-potassium bromate standard solution has been increased to "accurate to 0.01 mL" (see...).

6.23);

f) The option to use an 80 mL titration solvent has been added, and the corresponding sample volume requirements have been added to Table 1 (see 7.3, Table 1);

g) The contents of the "Report" have been changed (see Chapter 9, Chapter 11 of the 1989 edition);

h) Added content on "Quality Control" (see Chapter 10);

i) The precision was changed (see Chapter 11, Chapter 10 in the 1989 edition).

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 and is under the jurisdiction of the National Technical Committee on Standardization of Petroleum Products and Lubricants (SAC/TC280).

Introduction

This document provides a test method for determining the bromine index of petroleum hydrocarbons using a potentiometric titrator. The bromine index indicates the components of petroleum hydrocarbons that can react with bromine.

The total amount of substances. A higher bromine index indicates a higher content of unsaturated hydrocarbons in the sample. In the production of petroleum products such as gasoline, kerosene, diesel, and lubricating oil, this value is an important indicator for measuring the stability of petroleum products. In some chemical production processes (such as long-chain alkylation reactions), the bromine index can also be used.

A rough estimate of the product conversion rate is made. The bromine index in petroleum hydrocarbons with a final boiling point below 288°C is determined to evaluate the suitability of the light fraction as a reaction solvent.

Applicability.

When converting the bromine index to bromine value, it needs to be divided by a factor of 1000. For petroleum fractions with a bromine index greater than 1000 mg/100g (as Br), this applies.

For industrial aliphatic olefins, the GB/T 11135 method was used for determination to obtain more accurate results; the bromine index of industrial aromatics was determined using...

The determination was performed using methods SH/T 1551 and SH/T 1767; the bromine index of liquid petroleum ash and white oil was determined using method NB/SH/T 0995.

When selecting a measurement method, pay attention to the applicable scope of each standard method.

Determination of the bromine index of petroleum hydrocarbons by potentiometric titration
Warning---Personnel using this document should have practical experience in formal laboratory work. The use of this document may involve certain hazardous activities.

This document does not address all potential safety issues related to the materials, equipment, and operations used. Users are responsible for taking appropriate safety and health precautions.

Implement the measures and ensure they comply with the conditions stipulated by relevant national laws and regulations.

1 Scope

This document describes a method for determining the bromine index of petroleum hydrocarbons using potentiometric titration.

This document applies to petroleum hydrocarbons or mixtures with a final boiling point below 288°C that are substantially free of olefins and components lighter than isobutane, such as straight...

Petroleum fractions such as distilled and hydrocracked naphtha, reformat, kerosene, and aviation turbine fuel. The bromine index is measured within a range of 5 mg/L.

100g (calculated as Br) ~ 1000mg/100g (calculated as Br).

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 4756 Manual Sampling Method for Petroleum Liquids GB/T 6682-2008 Specifications and test methods for water used in analytical laboratories GB/T 27867 Automatic Sampling Method for Petroleum Liquid Pipelines NB/SH/T 0843 Evaluation Statistical Techniques for Testing Systems in the Petrochemical Industry

3 Terms and Definitions

The following terms and definitions apply to this document.

bromine index

The mass of bromine consumed in the reaction with 100g of sample under specified test conditions.

Note: Expressed in mg/100g (as Br).

4 Method Overview

A known mass of the sample is dissolved in a solvent maintained at 0°C~5°C, and then titrated with a potassium bromide-potassium bromate standard solution.

When the presence of free bromine in the solution causes a sudden jump in the potential of the potentiometric titrator, it indicates that the titration endpoint has been reached.

5 Instruments and Equipment

5.1

Potentiometric Titrator. Any instrument with a high-resistivity polarized current source capable of titrating to a preset endpoint can be used. The instrument has two platinum electrodes.

The interelectrode voltage should be maintained at approximately 0.8V, and the sensitivity should be such that the electrode can indicate the titration endpoint when the potential change is around 50mV. (The last sentence appears to be incomplete and possibly refers to a product or service.) Suitable potentiometric titrators of this type, including some pH meters, can be used.