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

GB/T 46422-2025

**Petroleum products and other liquids - Determination of total
acidity in ethanol - Potentiometric titration method**

石油产品及其他液体 乙醇总酸值的测定 电位滴定法

(English Translation)

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Foreword

This document conforms to GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting is scheduled.

This document is modified to adopt ISO 17315:2014 "Petroleum products and other liquid ethanol - Determination of total acid value by potentiometric titration".

Compared with ISO 17315:2014, this document has undergone the following structural adjustments.

- a) Chapter 2, "Normative References," has been added to comply with the requirements for drafting standardization documents in my country;
- b) A Chapter 4, "Method Summary," has been added to comply with my country's requirements for writing standardized documents;
- c) Chapter 5 corresponds to Chapter 3 of ISO 17315:2014, where 5.8h) corresponds to 3.7.3 of ISO 17315:2014;
- d) Chapter 6 corresponds to Chapter 4 of ISO 17315:2014;
- e) Chapter 7 corresponds to Chapter 5 of ISO 17315:2014;

- f) Chapter 8 corresponds to Chapter 6 of ISO 17315:2014, where 8.1.7 corresponds to 6.6 Note 2 in ISO 17315:2014;
- g) Chapter 9 corresponds to Chapter 7 of ISO 17315:2014;
- h) Chapter 10 corresponds to Chapter 8 of ISO 17315:2014;
- i) Chapter 11 corresponds to Chapter 9 of ISO 17315:2014.

The technical differences between this document and ISO 17315:2014, and the reasons therefor, are as follows.

- a) The scope of application of the method has been modified (see Chapter 1) to comply with my country's technical conditions;
- b) Descriptions of the uses of Method A and Method B have been added (see Chapter 1) to improve applicability;
- c) A definition for "acid value" has been added (see 3.2) to increase its applicability;
- d) A "Principle" section (see Chapter 4) has been added to conform to my country's technical requirements;
- e) ISO 3696 (see 5.1) has been replaced with the normatively referenced GB/T 6682 to meet the actual needs of use in my country;
- f) Nitrogen requirements have been added (see 5.3) to comply with my country's technical requirements;
- g) A method for preparing buffer solutions has been added (see 5.5) to comply with my country's technical requirements;
- h) The specific preparation methods for hydrochloric acid solution and sodium hydroxide solution (see 3.6 and 3.7.1 of ISO 17315:2014) have been deleted, and the solution is now required to be...

The preparation, calibration and storage of the liquid shall be carried out in accordance with GB/T 601-2016 (see 5.6 and 5.7) to adapt to the actual use conditions in my country;

- i) The storage and calibration requirements for hydrochloric acid solution and sodium hydroxide solution have been changed (see 5.8) to adapt to the actual usage in my country;
- j) The burette with a minimum capacity of 20 mL (see 4.6 of ISO 17315:2014) has been removed and is not used in this paper;
- k) Method B, nitrogen purification method (see 8.2), has been added to meet the usage requirements in my country;
- l) Precision data calculated according to GB/T 6683.1 has been added (see Chapter 11) to meet the actual needs of use in my country.

The following editorial changes have been made to this document.

a) Revise the standard name to "Determination of Total Acid Value of Petroleum Products and Other Liquid Ethanol by Potentiometric Titration" to conform to my country's actual situation.

Actual usage;

b) Notes 1 and 2 in Chapter 1, and notes 9.2 and 9.3 in ISO 17315:2014 have been deleted;

c) Notes have been added to Chapter 1 to adapt to the actual usage in my country;

d) Added 8.1.6 Note 2 to adapt to actual usage.

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/TC 280).

Introduction

Diluted aqueous solutions of organic acids (such as acetic acid) can corrode a variety of metals. Therefore, it is necessary to identify and control the acidity of the final product.

content.

Ethanol samples may contain organic acids during the production process (including handling, addition of additives, sample deterioration, or contamination). These substances...

The content can be determined by titration with a strong alkaline solution.

The total acid number is a numerical result that measures the amount of acid in a sample. It is used for quality control of long-term corrosion issues in the final product.

Due to its properties, the final product obtained by mixing ethanol with other fuels requires a limit on acid value.

Determination of total acid value of petroleum products and other liquid ethanol
Potentiometric titration Warning - Users of 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 materials, equipment, and operations. Users are responsible for taking appropriate safety and health precautions.

Measures shall be taken and the conditions stipulated in relevant national laws and regulations shall be guaranteed.

1 Scope

This document describes a test method for determining the total acid value and acid value in ethanol and fuel ethanol using potentiometric titration.

This document applies to ethanol and fuel ethanol with a volume fraction greater than 51%. Method A in this document is used for the direct determination of total acid number and is applicable to...

Method B is used for determining the acid value of general samples; Method B is used for determining the acid value after nitrogen purification and is suitable for samples with a total acid value of less than 20 mg/L.

Measurement.

Note: To avoid the influence of dissolved carbon dioxide on the results, Method B uses nitrogen to purify the sample.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are listed below.

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 601-2016 Preparation of Standard Titration Solutions for Chemical Reagents GB/T 6682 Specifications and test methods for water used in analytical laboratories GB/T 6683.1 Precision of Measurement Methods and Results for Petroleum and Related Products - Part 1: Precision Data of Test Methods Sure

3 Terms and Definitions

The following terms and definitions apply to this document.

Total acidity

The total amount of acidic compounds in the sample that can be titrated with a strong alkali solution, expressed as acetic acid.

acidity

The total amount of acidic compounds in the sample that can be titrated with a strong alkali solution after the sample is purified with nitrogen to remove carbon dioxide, expressed as acetic acid.