

Ethanol as a blending component for petrol - Determination of phosphorus content - Ammonium molybdate spectrometric method

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Determination of phosphorus content - Ammonium
molybdate spectrometric method

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 15487:2007 sisaldab Euroopa standardi EN 15487:2007 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 30.10.2007 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 15487:2007 consists of the English text of the European standard EN 15487:2007.</p> <p>This document is endorsed on 30.10.2007 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala: This standard specifies a procedure for the determination of phosphorus content measured as orthophosphate, in ethanol from 0,15 mg/l to 1,50 mg/l by ammonium molybdate spectrometric method. The phosphorus content is determined in aqueous solution after dissolution of the evaporation residue of the ethanol sample.</p>	<p>Scope: This standard specifies a procedure for the determination of phosphorus content measured as orthophosphate, in ethanol from 0,15 mg/l to 1,50 mg/l by ammonium molybdate spectrometric method. The phosphorus content is determined in aqueous solution after dissolution of the evaporation residue of the ethanol sample.</p>
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Võtmesõnad:

ICS 71.080.60

English Version

Ethanol as a blending component for petrol - Determination of phosphorus content - Ammonium molybdate spectrometric method

Éthanol comme base de mélange à l'essence -
Détermination de la teneur en phosphore - Méthode
spectrométrique au molybdate d'ammonium

Ethanol zur Verwendung als Blendkomponente in
Ottokraftstoff - Bestimmung des Phosphorgehaltes -
Spektrometrisches Verfahren mit Ammoniummolybdat

This European Standard was approved by CEN on 30 June 2007.

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Foreword

This document (EN 15487:2007) has been prepared by Technical Committee CEN/TC 19 "Gaseous and liquid fuels, lubricants and related products of petroleum, synthetic and biological origin", the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2008, and conflicting national standards shall be withdrawn at the latest by February 2008.

The method described in this document is based on EN ISO 6878 [1] and a method from a European Regulation on wine [2].

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

This standard specifies a procedure for the determination of phosphorus content measured as orthophosphate, in ethanol from 0,15 mg/l to 1,50 mg/l by ammonium molybdate spectrometric method. The phosphorus content is determined in aqueous solution after dissolution of the evaporation residue of the ethanol sample.

WARNING — Use of this standard may involve hazardous materials, operations and equipment. This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and to determine the applicability of regulatory limitations prior to use.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN ISO 3170, *Petroleum liquids — Manual sampling (ISO 3170:2004)*

EN ISO 3696, *Water for analytical laboratory use – Specification and test methods (ISO 3696:1987)*

3 Principle

After evaporation of the ethanol sample, the dry residue is dissolved in water. The aqueous solution is treated with an acid solution containing molybdate and antimony ions to obtain an antimony phosphomolybdate complex. The complex is then treated with ascorbic acid to form a strongly coloured molybdenum blue complex. The content of phosphorus is obtained by measuring the absorbance of the complex at 880 nm.

4 Reagents and materials

4.1 All reagents shall be of analytical reagent grade or of higher purity.

4.2 **Water**, for analytical laboratory use, conforming to grade 3 of ISO 3696.

4.3 **Sulphuric acid solution, $c(\text{H}_2\text{SO}_4) \approx 9 \text{ mol/l}$**

Add 500 ml \pm 5 ml water (4.2) to a 2 l beaker.

Cautiously add, with continuous stirring and cooling, 500 ml \pm 5 ml sulphuric acid, $\rho = 1,84 \text{ g/ml}$.

Mix well and allow the solution to cool to room temperature.

4.4 **Hydrochloric acid solution, $c(\text{HCl}) \approx 2,4 \text{ mol/l}$**

Cautiously add in a 1 000 ml volumetric flask (5.4), 200 ml \pm 10 ml of concentrated hydrochloric acid ($\rho = 1,18 \text{ g/ml}$) to 500 ml \pm 10 ml water (4.2).

Mix and cool to room temperature. Make up to 1 000 ml with water (4.2).

4.5 **Sodium hydroxide solution, $c(\text{NaOH}) = 2 \text{ mol/l}$**

Dissolve 80 g \pm 1 g sodium hydroxide pellets in water (4.2) in a 1 000 ml volumetric flask (5.4), cool and dilute to 1 l with water (4.2).

4.6 **Ascorbic acid solution, $c(\text{C}_6\text{H}_8\text{O}_6) = 100 \text{ g/l}$**

Dissolve 10 g \pm 0,5 g ascorbic acid in 100 ml \pm 5 ml water (4.2).

NOTE The solution is stable for 2 weeks if stored in an amber glass bottle in a refrigerator and can be used as long as it remains colourless.