

**Ethanol as a blending component for petrol -
Determination of phosphorus, copper and sulfur content
- Direct method by inductively coupled plasma optical
emission spectrometric (ICP-OES)**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 15837:2010 sisaldab Euroopa standardi EN 15837:2009 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 31.01.2010 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 09.12.2009.

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN 15837:2010 consists of the English text of the European standard EN 15837:2009.

This standard is ratified with the order of Estonian Centre for Standardisation dated 31.01.2010 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

Date of Availability of the European standard text 09.12.2009.

The standard is available from Estonian standardisation organisation.

ICS 75.160.20

Standardite reprodutseerimis- ja levitamiseõigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonilisse süsteemi või edastamine ükskõik millises vormis või millisel teel on keelatud ilma Eesti Standardikeskuse poolt antud kirjaliku loata.

Kui Teil on küsimusi standardite autorikaitse kohta, palun võtke ühendust Eesti Standardikeskusega:
Aru 10 Tallinn 10317 Eesti; www.evs.ee; Telefon: 605 5050; E-post: info@evs.ee

Right to reproduce and distribute Estonian Standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without permission in writing from Estonian Centre for Standardisation.

If you have any questions about standards copyright, please contact Estonian Centre for Standardisation:
Aru str 10 Tallinn 10317 Estonia; www.evs.ee; Phone: +372 605 5050; E-mail: info@evs.ee

ICS 75.160.20

English Version

Ethanol as a blending component for petrol - Determination of phosphorus, copper and sulfur content - Direct method by inductively coupled plasma optical emission spectrometry (ICP OES)

Ethanol comme base de mélange à l'essence - Détermination de la teneur en phosphore, en cuivre et en soufre - Méthode directe par spectrométrie d'émission atomique par plasma à couplage inductif (ICP OES)

Ethanol zur Verwendung als Blendkomponente in Ottokraftstoff - Bestimmung des Gehalts an Phosphor, Kupfer und Schwefel - Direktes Verfahren durch optische Emissionsspektrometrie mit induktiv gekoppeltem Plasma (ICP OES)

This European Standard was approved by CEN on 7 November 2009.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword.....	3
1 Scope	4
2 Normative references	4
3 Principle	4
4 Reagents	4
5 Apparatus	5
6 Sampling	6
7 Preparation of calibration solutions	6
8 Calibration	6
8.1 Preparation of the instrumentation	6
8.2 Execution of the calibration	6
8.3 Check of calibration	7
9 Sample analysis	7
10 Calculation	8
11 Expression of results	8
12 Precision	8
12.1 General	8
12.2 Repeatability, r	8
12.3 Reproducibility, R	9
13 Test report	9
Annex A (normative) Ethanol density	10
Bibliography	11

Foreword

This document (EN 15837:2009) 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 June 2010 and conflicting national standards shall be withdrawn at the latest by June 2010.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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 European Standard specifies an inductively coupled plasma optical emission spectrometry (ICP OES) method for the direct determination of elements content in ethanol, namely phosphorus in the range (0,13 to 1,90) mg/kg, copper in the range (0,050 to 0,300) mg/kg, and sulfur in the range (2,0 to 15,0) mg/kg.

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

NOTE For the purposes of this document, the terms “% (m/m)” and “% (V/V)” are used to represent respectively the mass fraction (w) and volume fraction (φ).

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 3675, *Crude petroleum and liquid petroleum products — Laboratory determination of density — Hydrometer method (ISO 3675:1998)*

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

EN ISO 12185, *Crude petroleum and petroleum products — Determination of density — Oscillating U-tube method (ISO 12185:1996)*

3 Principle

A portion of a sample is directly injected into the spray-chamber of an inductively coupled plasma emission spectrometer. The element content is determined by comparing the emission of the element in the test portion with the emission of the calibration solutions at the same wavelength.

The calibration solutions are prepared from suitable compounds dissolved in ethanol.

4 Reagents

Use only reagents of recognized analytical grade, unless otherwise specified.

4.1 Phosphorus standard solution, ready-made commercially available phosphorus aqueous standard solution, 1 000 mg/l.

4.2 Copper standard solution, ready-made commercially available copper aqueous standard solution, 1 000 mg/l.

4.3 Sulfur standard solution, which shall be either 4.3.1 or 4.3.2.

4.3.1 Sulfur standard solution, ready-made commercially available sulfur aqueous standard solution, 1 000 mg/l, or