Irish Standard
I.S. EN 15837:2009

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)

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NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie
W NSAI.ie

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

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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)

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Management Centre: Avenue Marnix 17, B-1000 Brussels

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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of an identical text or by endorsement, at the latest by June 2010 and conflicting national standards shall be withdrawn at the latest by June 2010.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.

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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