

**Fat and oil derivatives - Fatty Acid Methyl Esters (FAME) - Determination of phosphorus content by inductivity coupled plasma (ICP) emission spectrometry**

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## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 14107:2003 sisaldab Euroopa standardi EN 14107:2003 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 06.06.2003 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 14107:2003 consists of the English text of the European standard EN 14107:2003.</p> <p>This document is endorsed on 06.06.2003 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><b>Käsitlusala:</b> This European Standard specifies an inductively coupled plasma (ICP) emission spectrometry method for the determination of phosphorus content between 2 mg/kg and 20 mg/kg in Fatty Acid Methyl Esters, hereinafter referred as FAME.</p>	<p><b>Scope:</b> This European Standard specifies an inductively coupled plasma (ICP) emission spectrometry method for the determination of phosphorus content between 2 mg/kg and 20 mg/kg in Fatty Acid Methyl Esters, hereinafter referred as FAME.</p>
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ICS 67.200.10

**Võtmesõnad:** analysis, chemical analysis and testin, content, derivative of oil, determination, determination of content, fats, fatty acids, food products, icp, liquid, methyl esters, oils, phosphorus, phosphorus content, spectrometry, testing, vegetable oils

ICS 67.200.10

English version

## Fat and oil derivatives - Fatty Acid Methyl Esters (FAME) - Determination of phosphorus content by inductively coupled plasma (ICP) emission spectrometry

Produits dérivés des corps gras - Esters méthyliques  
d'acides gras (EMAG) - Détermination de la teneur en  
phosphore par spectrométrie d'émission de plasma induit  
par haute fréquence (méthode ICP)

Erzeugnisse aus pflanzlichen und tierischen Fetten und  
Ölen - Fettsäure-Methylester (FAME) - Bestimmung des  
Phosphorgehaltes durch Emissionsspektrometrie mit  
induktiv gekoppeltem Plasma (ICP)

This European Standard was approved by CEN on 2 January 2003.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.



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

Management Centre: rue de Stassart, 36 B-1050 Brussels

## Foreword

This document (EN 14107:2003) has been prepared by Technical Committee CEN /TC 307 "Oilseeds, vegetable and animal fats and oils and their by-products - Methods of sampling and analysis", the secretariat of which is held by AFNOR.

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 September 2003, and conflicting national standards shall be withdrawn at the latest by September 2003..

This document has been prepared under Mandate M/245 on Fatty Acid Methyl ester (FAME) given to CEN by the European Commission and the European Free Trade Association.

Annex A is informative.

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

## 1 Scope

This European Standard specifies an inductively coupled plasma (ICP) emission spectrometry method for the determination of phosphorus content between 4 mg/kg and 20 mg/kg in Fatty Acid Methyl Esters, hereinafter referred as FAME.

This method aims to evaluate the FAME quality, in terms of transesterification by-products content such as phosphorus, whose concentration may affect the fuel behaviour.

**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.**

## 2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN ISO 661, *Animal and vegetable fats and oils - Preparation of test portion (ISO 661:1989)*.

## 3 Terms and definitions

For the purposes of this European Standard, the following term and definition applies.

### 3.1

#### **phosphorus content**

residual phosphorus remaining in FAME from phospholipids after the vegetable oil transesterification reaction

## 4 Principle

A weighed test portion of sample is diluted in xylene. The standards are prepared from a phosphorus organic compound dissolved in a mineral oil and diluted in a mixture of xylene and stock oil. The addition of stock oil makes it possible to reduce the differences in viscosity between samples and standards and improves their storage.

The solutions are introduced in aerosol form into an inductively coupled argon plasma. The phosphorus content is determined by comparing the emission of the element in the solution of the test portion of the sample with the emission of the standards at the same wavelength.

NOTE 1 The wavelengths commonly used are 213,6 nm and 178,3 nm.

The sample shall be diluted at least ten times with xylene in order to allow a proper introduction of the aerosol into the plasma.

NOTE 2 Xylene may be replaced by other suitable solvents in case of instable plasma or specific laboratory safety use.