

**Rasva ja õli derivaadid. Rasvhapete metüülestrid. Estri ja linoleenhappe metüülestri sisalduse määramine**

Fat and oil derivatives - Fatty Acid Methyl Esters (FAME) - Determination of ester and linolenic acid methyl ester contents

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 14103:2011 sisaldab Euroopa standardi EN 14103:2011 ingliskeelset teksti.

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English Version

## Fat and oil derivatives - Fatty Acid Methyl Esters (FAME) - Determination of ester and linolenic acid methyl ester contents

Produits dérivés des corps gras - Esters méthyliques  
d'acides gras (EMAG) - Détermination de la teneur en ester  
et en ester méthylique de l'acide linoléinique

Erzeugnisse aus pflanzlichen und tierischen Fetten und  
Ölen - Fettsäure-Methylester (FAME) - Bestimmung des  
Ester-Gehaltes und des Gehaltes an Linolensäure-  
Methylester

This European Standard was approved by CEN on 10 March 2011.

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-CENELEC 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-CENELEC Management Centre has the same status as the official versions.

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## Foreword

This document (EN 14103:2011) 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of an identical text or by endorsement, at the latest by October 2011, and conflicting national standards shall be withdrawn at the latest by October 2011.

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.

This document supersedes EN 14103:2003.

The main modifications of the standard are intended:

- to enlarge the scope of the method to FAME from animal fat, by changing the internal standard (FAME C19 instead of FAME C17);
- to verify the purity of the internal standard as it was proven that some lots may have a purity not good enough;
- to improve the precision data by modifying the preparation of the test portion.

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, Croatia, 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

The purpose of this document is to describe a procedure for the determination of the ester content in fatty acid methyl esters (FAME) intended for incorporation into diesel oil. It also allows determining the linolenic acid methyl ester content. It allows verifying that the ester content of FAME is greater than 90 % (*m/m*) and that the linolenic acid content is between 1 % (*m/m*) and 15 % (*m/m*).

This method is suitable for FAME which contains methyl esters between C6 and C24.

NOTE For the purposes of this European Standard, the terms “% (*m/m*)” and “%(*v/v*)” are used to represent respectively the mass and volume fractions.

**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 Principle

Determination of the percentage of total methyl esters of fatty acids and the percentage of linolenic acid methyl ester present in the sample, by gas chromatography according to a procedure using internal calibration (nonadecanoic acid methyl ester).

## 3 Reagents

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

### 3.1 Toluene, analytical grade.

### 3.2 Nonadecanoic acid methyl ester (FAME C19), purity, min. 99,5 % (*m/m*)<sup>1)</sup>.

NOTE Standard should be kept in a dry storage in order to limit its water absorption. Its water content should be verified by Karl-Fischer when a new lot of standard is open.

### 3.3 Carrier gas, hydrogen or helium.

### 3.4 Auxiliary gases:

- air;
- hydrogen.

## 4 Apparatus

Usual laboratory apparatus and, in particular, the following.

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1) Nonadecanoic FAME with acceptable quality is available from Fluka - Ref: 74208 ([www.sigmaaldrich.com](http://www.sigmaaldrich.com)) or from Nu Chek Prep - Ref: N-19-M ([www.nu-chekprep.com](http://www.nu-chekprep.com)) or Dr. Ehrenstorfer GmbH – ref 15 622 360 ([www.analytical-standards.com](http://www.analytical-standards.com)). This information is given for the convenience of users of this European Standard and does not constitute an endorsement by CEN of these products.