

Fat and oil derivatives - Fatty Acid Methyl Esters (FAME)
- Determination of oxidation stability (accelerated
oxidation test)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 14112:2020 sisaldab Euroopa standardi EN 14112:2020 ingliskeelset teksti.	This Estonian standard EVS-EN 14112:2020 consists of the English text of the European standard EN 14112:2020.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 25.11.2020.	Date of Availability of the European standard is 25.11.2020.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 67.200.10

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

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

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:

Koduleht www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute 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 a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

English Version

Fat and oil derivatives - Fatty Acid Methyl Esters (FAME) - Determination of oxidation stability (accelerated oxidation test)

Produits dérivés des corps gras - Esters méthyliques
d'acides gras (EMAG) - Détermination de la stabilité à
l'oxydation (Essai d'oxydation accélérée)

Erzeugnisse aus pflanzlichen und tierischen Fetten und
Ölen - Fettsäure-Methylester (FAME) - Bestimmung
der Oxidationsstabilität (beschleunigte
Oxidationsprüfung)

This European Standard was approved by CEN on 25 October 2020.

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.

CEN members are the national standards bodies of 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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents	Page
European foreword.....	3
1 Scope	4
2 Normative references	4
3 Terms and definitions	4
4 Principle	5
5 Chemicals	5
6 Apparatus	5
7 Sampling	7
8 Preparation of measurement	8
8.1 Preparation of test sample	8
8.2 Preparation of apparatus	8
8.2.1 Cleaning procedure	8
8.2.2 Temperature correction	8
9 Measurement	9
10 Calculation and Evaluation	12
10.1 Automatic evaluation	12
10.2 Manual evaluation	14
11 Expression of results	15
12 Precision	15
12.1 General	15
12.2 Repeatability, r	15
12.3 Reproducibility, R	15
13 Test report	15
Annex A (informative) Background of the method	16
Annex B (informative) Results of an Interlaboratory Study	17
Bibliography	18

European foreword

This document (EN 14112:2020) 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 May 2021, and conflicting national standards shall be withdrawn at the latest by May 2021.

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

This document supersedes EN 14112:2016.

Significant changes between this document and EN 14112:2016 are:

- change of Figure 2, removal of dimension between air inlet and heating block;
- introduction removed;
- document revised editorially.

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This document specifies a method for the determination of the oxidation stability of fatty acid methyl esters (FAME) at 110 °C, by means of measuring the induction period up to 48 h.

For induction periods higher than 8,5 h the precision is not covered by the precision statement of this method.

NOTE 1 EN 15751 [1] describes a similar test method for oxidation stability determination of pure fatty acid methyl esters and of blends of FAME with petroleum-based diesel containing 2 % (V/V) of FAME at minimum.

NOTE 2 Limited studies on EN 15751 with EHN (2-ethyl hexyl nitrate) on FAME blends indicated that the stability is reduced to an extent which is within the reproducibility of the test method. It is likely that the oxidation stability of pure FAMES is also reduced in the presence of EHN when EN 14112 is used for testing.

NOTE 3 For the purposes of this document, the term “% (V/V)” is used to represent the volume fraction.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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)*

EN ISO 3171, *Petroleum liquids - Automatic pipeline sampling (ISO 3171)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1

induction period

time which passes between the moment when the measurement is started and the moment when the formation of oxidation products begins to increase rapidly

3.2

oxidation stability

induction period determined according to the procedure specified in this document, expressed in hours