

**Animal and vegetable fats and oils -  
Determination of the content of trans  
fatty acid isomers of vegetable fats and  
oils - Gas chromatographic method**

Animal and vegetable fats and oils - Determination  
of the content of trans fatty acid isomers of  
vegetable fats and oils - Gas chromatographic  
method

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 15304:2002 sisaldab Euroopa standardi EN ISO 15304:2002+AC:2004 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 06.08.2002 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO 15304:2002 consists of the English text of the European standard EN ISO 15304:2002+AC:2004.</p> <p>This document is endorsed on 06.08.2002 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></p> <p>This standard specifies a gas chromatographic method using capillary columns for the determination of the content of trans fatty acid isomers of vegetable oils and fats. The method is specially designed to evaluate, by a single capillary gas chromatographic (GC) procedure, the level of trans isomers as formed during (high temperature) refining, or during hydrogenation of vegetable oils or fats.</p>	<p><b>Scope:</b></p> <p>This standard specifies a gas chromatographic method using capillary columns for the determination of the content of trans fatty acid isomers of vegetable oils and fats. The method is specially designed to evaluate, by a single capillary gas chromatographic (GC) procedure, the level of trans isomers as formed during (high temperature) refining, or during hydrogenation of vegetable oils or fats.</p>
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**Võtmesõnad:** agricultural products, animal fats, animal oils, determination of content, fats, fatty acids, gas chromatography, oils, testing, vegetable fats, vegetable oils

ICS 67.200.10

English version

Animal and vegetable fats and oils - Determination of the  
content of trans fatty acid isomers of vegetable fats and oils -  
Gas chromatographic method (ISO 15304:2002)

Corps gras d'origines animale et végétale - Détermination  
de la teneur en isomères trans d'acides gras de corps gras  
d'origine végétale - Méthode par chromatographie en phase  
gazeuse (ISO 15304:2002)

Tierische und pflanzliche Fette und Öle - Bestimmung des  
Gehaltes an trans-Fettsäure-Isomeren in pflanzlichen  
Fetten und Ölen - Gaschromatographisches Verfahren  
(ISO 15304:2002)

This European Standard was approved by CEN on 8 March 2002.

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, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



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EUROPÄISCHES KOMITEE FÜR NORMUNG

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**CORRECTED 2002-04-17**

## **Foreword**

This document (ISO 15304:2002) has been prepared by Technical Committee ISO/TC 34 "Agricultural food products" in collaboration with 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 2002, and conflicting national standards shall be withdrawn at the latest by September 2002.

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, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

## **Endorsement notice**

The text of the International Standard ISO 15304:2002 has been approved by CEN as a European Standard without any modifications.

NOTE Normative references to International Standards are listed in annex ZA (normative).

## **Annex ZA**

(normative)

### **Normative references to international publications with their relevant European publications**

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).

NOTE Where an International Publication has been modified by common modifications, indicated by (mod.), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN</u>	<u>Year</u>
ISO 661	1989	Animal and vegetable fats and oils — Preparation of test sample	EN ISO 661	1995
ISO 5509	2000	Animal and vegetable fats and oils — Preparation of methyl esters of fatty acids.	EN ISO 5509	2000

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**Animal and vegetable fats and oils —  
Determination of the content of *trans* fatty  
acid isomers of vegetable fats and oils —  
Gas chromatographic method**

*Corps gras d'origines animale et végétale — Détermination de la teneur en  
isomères trans d'acides gras de corps gras d'origine végétale — Méthode  
par chromatographie en phase gazeuse*



Reference number  
ISO 15304:2002(E)

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

ISO 15304 was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 11, *Animal and vegetable fats and oils*.

Annexes A to E of this International Standard are for information only.

In this corrected version, the identification of the main C18:2 *cis* isomer peak in Figure B.2 (the central peak in the figure) has been corrected from

C18:1 12*cis*

to

C18:2 9*cis*, 12*cis*

# Animal and vegetable fats and oils — Determination of the content of *trans* fatty acid isomers of vegetable fats and oils — Gas chromatographic method

## 1 Scope

This International Standard specifies a gas chromatographic method using capillary columns for the determination of the content of *trans* fatty acid isomers of vegetable oils and fats.

The method is specially designed to evaluate, by a single capillary gas chromatographic (GC) procedure, the level of *trans* isomers as formed during (high temperature) refining, or during hydrogenation of vegetable oils or fats.

The method may also be used to report all other fatty acids (e.g. to obtain the full fatty acid composition and total amounts of saturated fatty acids, mono-unsaturated fatty acids and poly-unsaturated fatty acids) from the same sample and same analysis.

NOTE 1 The *trans*-isomer content as obtained with this method may not agree with the *trans*-isomer content as obtained using other methods.

NOTE 2 During (high temperature) refining (deacidification and deodorization), only geometrical isomers are formed of the mono- and poly-unsaturated fatty acids; i.e. the double bond(s) remain(s) at the same natural position. During hydrogenation, both positional and geometrical isomers are formed.

NOTE 3 For some specific *cis*- and *trans*-isomers formed during hydrogenation, co-elution is possible. This could influence the accuracy of the result. The level of these isomers is usually negligible in normal partially hydrogenated oils and fats.

## 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 661, *Animal and vegetable fats and oils — Preparation of test sample*

ISO 5509, *Animal and vegetable fats and oils — Preparation of methyl esters of fatty acids*

## 3 Terms and definitions

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

### 3.1

#### **content of *trans* fatty acid isomers of (high temperature) refined oils and fats**

sum of the C18:1 *trans*, C18:2 *trans* and C18:3 *trans* fatty acid methyl esters, expressed as a mass fraction of all fatty acid methyl esters