

---

---

**Animal and vegetable fats and oils —  
Separation of lipid classes by capillary  
gas chromatography (fingerprint  
method)**

*Corps gras d'origines animale et végétale — Séparation des classes  
lipidiques par chromatographie en phase gazeuse sur colonne  
capillaire (méthode fingerprint)*



This document is a preview generated by EKO



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2021

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

Published in Switzerland

# Contents

Page

<b>Foreword</b>	<b>iv</b>
<b>1 Scope</b>	<b>1</b>
<b>2 Normative references</b>	<b>1</b>
<b>3 Terms and definitions</b>	<b>1</b>
<b>4 Principle</b>	<b>1</b>
<b>5 Reagents</b>	<b>2</b>
<b>6 Apparatus</b>	<b>3</b>
<b>7 Sample</b>	<b>3</b>
7.1 Sampling	3
7.2 Preparation of test sample	3
<b>8 Procedure</b>	<b>3</b>
8.1 Preparation of the internal standard, tridecanoylglycerol (5.2.5), $c = 20$ mg/ml	3
8.2 Preparation of the individual standard solutions for determination of response factors	3
8.3 Silylation of the standards	4
8.4 Preparation of the sample	4
8.5 Sample solution	4
8.6 Silylation of the sample	4
8.7 Gas chromatography	4
8.8 Peak identification and integration	5
<b>9 Result of the determination</b>	<b>6</b>
9.1 Calculation of the response factor	6
9.2 Quantitative determination	6
<b>10 Precision of the method</b>	<b>7</b>
10.1 Interlaboratory test	7
10.2 Repeatability	7
10.3 Reproducibility	7
<b>11 Test report</b>	<b>7</b>
<b>Annex A (informative) Typical chromatograms</b>	<b>8</b>
<b>Annex B (informative) Results of an interlaboratory test</b>	<b>18</b>
<b>Bibliography</b>	<b>22</b>

## 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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 11, *Animal and vegetable fats and oils*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 307, *Oilseeds, vegetable and animal fats and oils and their by-products — Methods of sampling and analysis*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

# Animal and vegetable fats and oils — Separation of lipid classes by capillary gas chromatography (fingerprint method)

## 1 Scope

This document specifies a method for the semi-quantitative analysis of oils, fats and oil/fat-related samples (deodistillates).

It is applicable to the screening of oils, fats and oil/fat-related samples to obtain main (e.g. triglycerides) and minor (e.g. sterols, sterol esters, tocopherols, wax esters, fatty alcohols, glycerol) component information in one single analysis. For a truly quantitative analysis of pre-identified compound classes, specific methods are more appropriate.

The method can also be used as a useful qualitative screening tool for the relative comparison of sample compositions.

## 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.

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

## 3 Terms and definitions

No terms and definitions are listed in this document.

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

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

## 4 Principle

The hydroxylated compounds are transformed into silyl derivatives. This operation has no effect on the apolar (non-hydroxylated) compounds also present in the sample. The sample prepared is analysed by gas chromatography (GC) on a high-temperature capillary column with a low film thickness, with an on-column injector and flame-ionization detector.

For quantitative purposes, the compounds are quantified in the presence of an internal standard (1,2,3-tridecanoylglycerol) and the response factors are determined from a reference standard from each class.