

---

---

**Determination of individual  
and total sterols contents — Gas  
chromatographic method —**

Part 2:  
**Olive oils and olive pomace oils**

*Détermination de la teneur en stérols individuels et totaux —  
Méthode par chromatographie en phase gazeuse —*

*Partie 2: Huile d'olive et huile de grignons d'olive*

This document is a preview generated by EMS



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2014

All rights reserved. Unless otherwise specified, 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  
Case postale 56 • CH-1211 Geneva 20  
Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.org](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

# Contents

	Page
Foreword.....	iv
<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>2</b>
<b>5 Reagents</b> .....	<b>2</b>
<b>6 Apparatus</b> .....	<b>3</b>
<b>7 Sample</b> .....	<b>4</b>
7.1 Sampling.....	4
7.2 Preparation of the test sample.....	4
<b>8 Procedure</b> .....	<b>4</b>
8.1 Test portion.....	4
8.2 Preparation of unsaponifiable matter.....	4
8.3 Separation of the sterol and triterpene dialcohols (erythrodiol, uvaol) fractions by TLC.....	5
8.4 Preparation of the trimethylsilyl ethers.....	6
8.5 Gas chromatographic analysis.....	6
<b>9 Expression of results</b> .....	<b>7</b>
9.1 Quantitative evaluation.....	7
9.2 Determination of the total sterol content.....	8
9.3 Composition of sterols.....	8
9.4 Composition of triterpene dialcohols.....	8
<b>10 Precision</b> .....	<b>9</b>
10.1 Interlaboratory test.....	9
10.2 Repeatability limit, <i>r</i> .....	9
10.3 Reproducibility limit, <i>R</i> .....	9
<b>11 Test report</b> .....	<b>9</b>
<b>Annex A (informative) Figures</b> .....	<b>10</b>
<b>Annex B (informative) Interlaborative trial</b> .....	<b>13</b>
<b>Bibliography</b> .....	<b>16</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 on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 34, *Food products*, Subcommittee SC 11, *Animal and vegetable fats and oils*.

This first edition of ISO 12228-2 cancels and replaces ISO 12228:1999, which has been technically revised.

ISO 12228 consists of the following parts, under the general title *Determination of individual and total sterols contents — Gas chromatographic method*:

- *Part 1: Animal and vegetable fats and oils*
- *Part 2: Olive oils and olive pomace oils*

# Determination of individual and total sterols contents — Gas chromatographic method —

## Part 2: Olive oils and olive pomace oils

### 1 Scope

This part of ISO 12228 specifies a procedure for the gas chromatographic determination of the contents and composition of sterols and triterpene dialcohols in olive and olive pomace oils. For the determination of the contents and composition of sterols in all other animal and vegetable fats and oils, ISO 12228-1 is to be used.

NOTE This part of ISO 12228 is technically identical to IOC Standard COI/T.20/Doc. No. 30 (November 2011).

### 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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

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

#### 3.1

##### **composition of sterols**

composition of individual sterols in the sample, beginning with cholesterol and ending with  $\Delta^7$ -avenasterol (see [Table 1](#)) under the conditions specified in this part of ISO 12228

Note 1 to entry: The composition is expressed as a percentage of all peak areas, normalized to 100 %.

#### 3.2

##### **total sterol content**

mass fraction of the sum of all individual sterols, as determined in accordance with the method specified in this part of ISO 12228, beginning with cholesterol and ending with  $\Delta^7$ -avenasterol (see [Table 1](#)), divided by the mass of the test portion

Note 1 to entry: The content is expressed in milligrams per kilogram.

#### 3.3

##### **composition of triterpene dialcohols**

composition of erythrodiol and uvaol in the sample under the conditions specified in this part of ISO 12228

Note 1 to entry: The composition is expressed as a percentage of all peak areas, beginning with cholesterol and ending with uvaol (see [Table 1](#)) under the conditions specified in this part of ISO 12228, normalized to 100 %.