

# CODEx ALIMENTARIUS COMMISSION

# E



Food and Agriculture  
Organization of the  
United Nations



World Health  
Organization

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Agenda Item 4

CX/FO 19/26/4 - Rev.1

November 2018

## JOINT FAO/WHO FOOD STANDARDS PROGRAMME

### CODEx COMMITTEE ON FATS AND OILS

#### Twenty-Sixth Session

Kuala Lumpur, Malaysia, 25 February- 01 March 2019

### PROPOSED DRAFT REVISION TO THE *STANDARD FOR OLIVE OILS AND OLIVE POMACE OILS* (CXS 33-1981)

(Prepared by the Electronic Working Group chaired by Spain and co-chaired by Argentina and Canada)

#### (At Step 3)

Governments and interested international organizations are invited to submit comments on **the proposed draft revision to the standard as presented in Annex I**, at Step 3, by **15 January 2019**.

Comments should be submitted through the Codex online Commenting System (OCS): <https://ocs.codexalimentarius.org/> as stipulated in [CL 2018/76/OCS – CCFO](#).

#### Background

1. At the 25<sup>th</sup> Session of the Codex Committee on Fats and Oils (CCFO25) held in Kuala Lumpur, Malaysia, the delegation of the European Union noted that the *Standard for Olive Oils and Olive Pomace Oils* (CXS 33-1981) had not been reviewed in the past 15 years, despite the fact that there had been considerable technological and scientific innovations, cultivation areas had expanded, and the volumes and value of trade had increased.
2. The Committee agreed to start new work on the revision of Sections 3, 8 and the Appendix of the *Standard for Olive Oils and Olive Pomace Oils* (CXS 33-1981). In considering this work, the Committee clarified that the proposed work would take into account the needs of Codex members, the latest technological knowledge and scientific progress of the sector in order to facilitate trade, promote consumer protection and facilitate the harmonization of national legislation with Codex.
3. The Committee also agreed to establish an eWG, chaired by Spain, co-chaired by Argentina and Canada, and working in English only, to prepare the proposed draft revisions of the *Standard for Olive Oils and Olive Pomace Oils* (CXS 33-1981) for circulation for comments at Step 3 and consideration at CCFO26, subject to CAC40 approval of the new work.
4. In addition, the committee agreed to convene a physical working group (pWG) chaired by Spain and co-chaired by Argentina and Canada, open to all members, which will meet immediately before the 26<sup>th</sup> Session of the CCFO to consider the eWG report and comments received.

#### Timeline and Discussions

5. The Electronic Working Group was established on 2017 with invitation from Spain, Argentina and Canada to Codex members and observer organizations interested in participating in this electronic working group. Representatives from 25 Codex member countries including the European Union, and 1 observer organization, expressed interest to participate (Annex II)
6. The eWG worked from September 2017 to September 2018, and started with discussion and agreement on the various regional, national and international standards for consideration. The group then held its discussion over two rounds; the first round included a series of discussion documents with questionnaires, to consult on definitions and terms, quality factors and essential composition. The second round began in July 2018 when discussions were held on the items on which there had been no consensus and on the list of methods of analysis and sampling.

7. The work of this eWG started with a comparative analysis of the following standards:
- Standard for Olive Oils and Olive Pomace Oils. CXS 33-1981. Adopted in 1981. Revised in 1989, 2003, 2015. Amended in 2009, 2013.
  - Código Alimentario Argentino. Capítulo VII. Alimentos Grasos. Aceites Alimenticios. Artículos 535 y 536.
  - United States Standards for Grades of Olive Oil and Olive-Pomace Oil. Effective October 25, 2010.
  - Australian Standard®. Olive Oils and Olive-Pomace Oils. **AS 5264—2011**
  - South African National Standard. Olive oils and olive-pomace oils. **SANS 1377:2015 Edition 1**
  - State of California. Department of Food and Agriculture. Grade and Labeling Standards for Olive Oil, Refined- Olive Oil and Olive-Pomace Oil. Effective September 27, 2016.
  - Ministério da Agricultura, Pecuária e Abastecimento. Gabinete do Ministro. Instrução normativa Nº 1, 30 de Janeiro de 2012;
  - Commission Regulation (EEC) No 2568/91 of 11 July 1991 on the characteristics of olive oil and olive-residue oil and on the relevant methods of analysis. **Consolidated version: 04/12/2016.**
  - International Olive Council **Trade Standard**. COI/T.15/NC No 3/Rev. 11. July, 2016.
8. There was consensus on many items, and where majority of the members supported specific changes, these were considered for revision. However, there were also a number of areas where divergent opinions were received, and which will be brought to the 26<sup>th</sup> session of CCFO for consideration, including: Definition of refined olive oil – members had different opinions on the inclusion of refining methods; Naming of specific oils – there was no consensus on the names to be used for Olive Oil and Olive-Pomace Oil; Fatty acid composition – lower limits for C16:0 and C18:1.

### **Conclusion and Recommendation**

9. Annex I contains the proposed draft revisions to the standard, including the amendments agreed by the eWG members. The items that are still to be discussed appear in square brackets.

**PROPOSED DRAFT REVISION TO THE STANDARD FOR OLIVE OILS AND OLIVE POMACE OILS  
(CXS 33-1981)**

**(Step 3)**

**Notes on Proposed Revisions to Current Standard:**

**Bold and underlined**: amendment agreed to by all/ majority of members of the electronic working group (consensus)

*[In square brackets and italics]*: proposed amendment but not agreed to by all/majority of members (no consensus)

~~Strikethrough~~: text agreed to be deleted (with consensus)

~~[Strikethrough in square brackets]~~: text proposed to be deleted but not agreed to by all/ majority of eWG members

## 1. SCOPE

This standard applies to olive oils and olive-pomace oils described in Section 2 presented in a state for human consumption.

## 2. DESCRIPTION

**Olive oil** is the oil obtained solely from the fruit of the olive tree (*Olea europaea*L.), to the exclusion of oils obtained using solvents or re-esterification processes and of any mixture with oils of other kinds.

**Virgin olive oils** are the oils obtained from the fruit of the olive tree solely by mechanical or other physical means under conditions, particularly thermal conditions, that do not lead to alterations in the oil, and which have not undergone any treatment other than washing, decanting, centrifuging and filtration.

**Olive-pomace oil** is the oil obtained by treating olive pomace with solvents other than halogenated solvents or by other physical treatments, to the exclusion of oils obtained by re-esterification processes and of any mixture with oils of other kinds.

## 3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

**Extra virgin olive oil**: virgin olive oil with a free acidity, expressed as oleic acid, of not more than 0.80 grams per 100 grams and whose other **physicochemical and organoleptic** characteristics correspond to those laid down for this category.

**Virgin olive oil**: virgin olive oil with a free acidity, expressed as oleic acid, of not more than 2.0 grams per 100 grams and whose other characteristics **physicochemical and organoleptic** correspond to those laid down for this category.

~~**Ordinary virgin olive oil**: virgin olive oil with a free acidity, expressed as oleic acid, of not more than 3.3 grams per 100 grams and whose other characteristics correspond to those laid down for this category<sup>1</sup>.~~

**Refined olive oil**: olive oil obtained from virgin olive oils by refining methods which do not lead to alterations in the initial glyceridic structure. It has a free acidity, expressed as oleic acid, of not more than 0.30 grams per 100 grams and its other characteristics correspond to those laid down for this category<sup>1</sup>

or

**[Refined olive oil**: olive oil obtained from virgin olive oils by refining methods *[(including methods aiming to the complete or partial removal of chemical compounds responsible for organoleptic descriptors)]* which do not lead to alterations in the initial glyceridic structure. It has a free acidity, expressed as oleic acid, of not more than 0.30 grams per 100 grams and its other characteristics correspond to those laid down for this category]

or

**[Refined olive oil**: olive oil obtained from virgin olive oils by refining methods, *[soft conditions and milder treatments included] [including any combination of heating, reduced pressure and/or filtering with bleaching earth]*, which do not lead to alterations in the initial glyceridic structure. It has a free acidity,

<sup>1</sup> This product may only be sold direct to the consumer if permitted in the country of retail sale. *[Pending to remove this note by the CCFO plenary]*

expressed as oleic acid, of not more than 0.30 grams per 100 grams and its other [*physicochemical* [*and organoleptic*] characteristics correspond to those fixed for this category in this standard].

**[~~Olive oil~~] [Olive oil composed of refined olive oil and virgin olive oils]:** oil consisting of a blend of refined olive oil and virgin olive oils suitable for human consumption. It has a free acidity, expressed as oleic acid, of not more than 1.0 gram per 100 grams and its other characteristics [*physicochemical and organoleptic characteristics*] correspond to those laid down for this category.<sup>2</sup>

**Refined olive-pomace oil:** oil obtained from crude olive-pomace oil by refining methods which do not lead to alterations in the initial glyceridic structure. It has a free acidity, expressed as oleic acid, of not more than 0.30 grams per 100 grams and its other characteristics [*physicochemical and organoleptic*] correspond to those laid down for this category<sup>1</sup>.

**[~~Olive-pomace oil~~] [Olive-pomace oil composed of refined olive pomace oil and virgin olive oils]:** oil consisting of a blend of refined olive-pomace oil and virgin olive oils. It has a free acidity, expressed as oleic acid, of not more than 1.0 gram per 100 grams and its other characteristics [*physicochemical and organoleptic*] correspond to those laid down for this category.<sup>2</sup>

### 3.1 Organoleptic characteristics (odour and taste) of virgin olive oils

|  | Median of the defect      | Median of the fruity attribute |
|--|---------------------------|--------------------------------|
| Extra virgin olive oil                   | Me = 0 <u>0</u>           | Me > ≥ 0 <u>0</u>              |
| Virgin olive oil                         | 0 < Me ≤ 2.5 ≤ <u>3.5</u> | Me > ≥ 0 <u>0</u>              |
| [ <del>Ordinary virgin olive oil</del> ] | [2.5 < Me ≤ 6.0*]         |                                |

[\* or when the median of the defect is less than or equal to 2.5 and the median of the fruity attribute is equal to 0.]

### Fatty acid composition as determined by gas chromatography (% total fatty acids)

|                         | Virgin olive oils      | [ <del>Olive oil</del> ] [Olive oil composed of refined olive oil and virgin olive oils]<br>Refined olive oil | [ <del>Olive-pomace oil</del> ] [Olive-pomace oil composed of refined olive pomace oil and virgin olive oils]<br>Refined olive-pomace oil |
|-------------------------|------------------------|---|---|
| Fatty acid              |                        |   |   |
| C14:0                   | 0.0 – 0.05 <u>0.03</u> | 0.0 – 0.05 <u>0.03</u>  | 0.0 – 0.05 <u>0.03</u>  |
| C16:0                   | [7.0] 7.5 – 20.0       | [7.0] 7.5 – 20.0  | [7.0] 7.5 – 20.0  |
| C16:1                   | 0.3 – 3.5              | 0.3 – 3.5   | 0.3 – 3.5   |
| C17:0                   | 0.0 – 0. <u>30.4</u>   | 0.0 – 0. <u>30.4</u>  | 0.0 – 0. <u>30.4</u>  |
| C17:1                   | 0.0 – 0. <u>30.6</u>   | 0.0 – 0. <u>30.6</u>  | 0.0 – 0. <u>30.6</u>  |
| C18:0                   | 0.5 -5.0               | 0.5 - 5.0   | 0.5 – 5.0   |
| C18:1                   | [53.0] 55.0 – 83.0     | [53.0] 55.0 – 83.0  | [53.0] 55.0 – 83.0  |
| C18:2                   | <u>2.53-5</u> – 21.0   | <u>2.53-5</u> – 21.0  | <u>2.53-5</u> – 21.0  |
| C18:3 <sup>3</sup>      |                        |   |   |
| C20:0                   | 0.0 – 0.6              | 0.0 – 0.6   | 0.0 – 0.6   |
| C20:1                   | 0.0 – 0. <u>40.5</u>   | 0.0 – 0. <u>40.5</u>  | 0.0 – 0. <u>40.5</u>  |
| C22:0                   | 0.0 – 0.2              | 0.0 – 0.2   | 0.0 – 0.3   |
| C24:0                   | 0.0 – 0.2              | 0.0 – 0.2   | 0.0 – 0.2   |
| <i>Trans</i> fatty acid |                        |   |   |
| C18:1 T                 | 0.0 – 0.05             | 0.0 – 0.20  | 0,0 - 0,40  |
| C18:2 T + C18:3 T       | 0.0 – 0.05             | 0.0 – 0.30  | 0,0 - 0,35  |

<sup>2</sup>The country of retail sale may require a more specific designation.

<sup>3</sup> Pending the results of IOC (International Olive Council) survey and further considerations by the Committee on Fats and Oils. National limits may remain in place.

## Content of 2-glyceryl monopalmitate (%)

|   |  |
|---|--|
| Virgin olive oils<br><del>[Olive oil]</del> [Olive oil composed of refined olive oil and virgin olive oils] | C16:0 ≤ 14.0 %; 2P ≤ 0.9 %<br>C16:0 > 14.0 %, 2P ≤ 1.0 % |
| Refined olive oil   | C16:0 ≤ 14.0 %; 2P ≤ 0.9 %<br>C16:0 > 14.0 %, 2P ≤ 1.1 % |
| Refined olive-pomace oil  | ≤ 1.4%   |
| <del>[Olive-pomace oil]</del> [Olive-pomace oil composed of refined olive pomace oil and virgin olive oils] | ≤ 1.2 %  |

## Sterol and triterpene dialcohol composition

## Desmethylsterol composition (% total sterols)

|   |   |
|---|---|
| Cholesterol   | ≤ 0.5   |
| Brassicasterol  | ≤ 0.1 for other grades <u>for olive oils</u><br>≤ 0.2 for olive-pomace oils |
| Campesterol   | ≤ 4.0 <sup>(a)</sup>  |
| Stigmasterol  | < campesterol   |
| Δ7-stigmastenol   | ≤ 0.5 <sup>(b)</sup>  |
| <u>Apparent β-sitosterol</u> <sup>(c)</sup><br>Beta-sitosterol + delta-5-avenasterol + delta-5-23-stigmastadienol + clerosterol + sitostanol + delta-5-24-stigmastadienol | ≥ 93.0  |

<sup>(a)</sup> When an authentic oil naturally has a campesterol level >4.0% and ≤ 4.5%, it is considered virgin or extra virgin olive oil if the stigmasterol level is ≤ 1.4% and the delta-7-stigmastenol level is ≤ 0.3% and stigmastadienes is ≤ 0.05 mg/kg. The other parameters shall meet the limits set out in the standard.

<sup>(b)</sup> **For virgin olive oils** If the value is >0.5 y ≤ 0.8%, campesterol must be ≤ 3.3, **apparent β-sitosterol/(campesterol+Δ7-stigmastenol) ≥ 25**, stigmasterol ≤ 1.4 and ΔECN<sub>42</sub> ≤ 0.1]. **For refined olive pomace oils** values >0.5 and ≤ 0.7% then stigmasterol ≤ 1.4% and ΔECN<sub>42</sub> ≤ 0.4.

<sup>(c)</sup> Chromatographic peak composed by: Δ5.23-estigmastadienol+clerosterol+β-sitosterol+sitostanol+Δ5-avenasterol+Δ5.24-estigmastadienol.

## Minimum Value for total sterols

|   |                                |
|---|--------------------------------|
| Virgin olive oils<br>Refined olive oil<br>Olive oil   | 1,000 mg/kg                    |
| Refined olive-pomace oil<br>Olive-pomace oil  | 1,800 mg/kg<br>1,600 mg/kg     |
| Virgin olive oils<br><del>[Olive oil]</del> [Olive oil composed of refined olive oil and virgin olive oils]<br>Refined olive oil        | ≥ 1,000 mg/kg<br>≥ 1,600 mg/kg |
| <del>[Olive-pomace oil]</del> [Olive-pomace oil composed of refined olive pomace oil and virgin olive oils]<br>Refined olive-pomace oil | ≥ 1,800 mg/kg                  |

**Maximum Erythrodiol and uvaol content (% total sterols)**

|   |       |
|---|-------|
| Virgin olive oils<br><del>[Olive oil]</del> [Olive oil composed of refined olive oil and virgin olive oils]<br>Refined olive oil        | ≤ 4.5 |
| <del>[Olive-pomace oil]</del> [Olive-pomace oil composed of refined olive pomace oil and virgin olive oils]<br>Refined olive-pomace oil | > 4.5 |

**Waxes content**

|   |   |
|---|---|
| Virgin olive oils   | ≤ 250 mg/kg ≤ <b>150 mg/kg</b> <sup>(d)</sup> |
| <del>[Olive oil]</del> [Olive oil composed of refined olive oil and virgin olive oils]<br>Refined olive oil                             | ≤ 350 mg/kg                                   |
| <del>[Olive-pomace oil]</del> [Olive-pomace oil composed of refined olive pomace oil and virgin olive oils]<br>Refined olive-pomace oil | > 350 mg/kg                                   |

<sup>(d)</sup> Sum of C<sub>42</sub>+C<sub>44</sub>+C<sub>46</sub>**ΔECN<sub>42</sub> - Maximum difference between the actual and theoretical ECN 42 triglyceride content**

|   |     |
|---|-----|
| Virgin olive oils   | 0.2 |
| <del>[Olive oil]</del> [Olive oil composed of refined olive oil and virgin olive oils]<br>Refined olive oil                             | 0.3 |
| <del>[Olive-pomace oil]</del> [Olive-pomace oil composed of refined olive pomace oil and virgin olive oils]<br>Refined olive-pomace oil | 0.5 |

**Maximum stigmastadienes content**

|                   |                          |
|-------------------|--------------------------|
| Virgin olive oils | 0.15 ≤ <b>0.05 mg/kg</b> |
|-------------------|--------------------------|

**Peroxide value (milliequivalents of active oxygen/kg oil)**

|   |               |
|---|---------------|
| Virgin olive oils   | ≤ <b>20.0</b> |
| Refined olive oil   | ≤ <b>5.0</b>  |
| <del>[Olive oil]</del> [Olive oil composed of refined olive oil and virgin olive oils]                      | ≤ <b>15.0</b> |
| Refined olive-pomace oil  | ≤ <b>5.0</b>  |
| <del>[Olive-pomace oil]</del> [Olive-pomace oil composed of refined olive pomace oil and virgin olive oils] | ≤ <b>15.0</b> |

**Absorbency in ultra-violet K270the ultraviolet region ( $K_{1cm}^{\%}$ )**

|   | Absorbency in ultra-violet at 270 nm<br>270nm/268nm             | Delta K<br>$\Delta K^{(5)}$       |
|---|---|-----------------------------------|
| Extra virgin olive oil  | $\leq 0.22$   | $\leq 0.01$                       |
| Virgin olive oil  | $\leq 0.25$   | $\leq 0.01$                       |
| <del>[Ordinary virgin olive oil]</del>  | <del><math>\leq 0.30^*</math></del>                             | <del><math>\leq 0.01</math></del> |
| Refined olive oil   | <del><math>\leq 1.10</math></del> <b><math>\leq 1.25</math></b> | $\leq 0.16$                       |
| <del>[Olive oil]</del> [Olive oil composed of refined olive oil and virgin olive oils]                      | <del><math>\leq 0.90</math></del> <b><math>\leq 1.15</math></b> | $\leq 0.15$                       |
| Refined olive-pomace oil  | $\leq 2.00$   | $\leq 0.20$                       |
| <del>[Olive-pomace oil]</del> [Olive-pomace oil composed of refined olive pomace oil and virgin olive oils] | $\leq 1.70$   | $\leq 0.18$                       |

[\* After passage of the sample through activated alumina, absorbency at 270 nm shall be equal to or less than 0.11.]

(5)

$$\Delta K_{270} = K_{270} - \frac{(K_{266} + K_{274})^2}{2}$$

$$\Delta K_{268} = K_{268} - \frac{(K_{264} + K_{272})^2}{2}$$

**Others**

|   |                             |
|---|-----------------------------|
| <b>Fatty acid ethyl esters – FAEE (mg/kg)</b> | <b><math>\leq 35</math></b> |
|---|-----------------------------|

**4. FOOD ADDITIVES****4.1 Virgin olive oils**

No additives are permitted in these products.

**4.2 Refined olive oil, olive oil, refined olive-pomace oil and olive-pomace oil**

The addition of alpha-tocopherols (d-alpha tocopherol (INS 307a); mixed tocopherol concentrate (INS 307b); dl-alpha-tocopherol (INS 307c)) to the above products is permitted to restore natural tocopherol lost in the refining process. The concentration of alpha-tocopherol in the final product shall not exceed 200 mg/kg.

**5. CONTAMINANTS**

**5.1** The **products** covered by this Standard shall comply with the Maximum Levels of the *General Standard for Contaminants and Toxins in Food and Feed* (CXS 193-1995).

**5.2 Pesticide residues**

The products covered by the provisions of this standard shall comply with those maximum residue limits established by the Codex Alimentarius Commission for these commodities.

**5.3 Halogenated solvents**

Maximum content of each halogenated solvent: 0.1 mg/kg

Maximum content of the sum of all halogenated solvents: 0.2 mg/kg

**6. HYGIENE**

It is recommended that the products covered by the provisions of this Standard be prepared and handled in accordance with the appropriate sections of the *General Principles of Food Hygiene* (CXC 1-1969), and other relevant Codex texts such as Codes of Hygienic Practice and Codes of Practice.

The products should comply with any microbiological criteria established in accordance with the *Principles and Guidelines for the Establishment and Application of Microbiological Criteria Related to Foods* (CXG 21-1997).

## 7. LABELLING

The products shall be labelled in accordance with the *General Standard for the Labelling of Prepackaged Foods* (CXS 1-1985).

### 7.1 Name of the food

The name of the product shall be consistent with the descriptions as shown in Section 3 of this standard. In no case shall the designation 'olive oil' be used to refer to olive-pomace oils.

### 7.2 Labelling of Non-Retail Containers

Information on the above labelling requirements shall be given either on the container or in accompanying documents, except that the name of the food, lot identification and the name and address of the manufacturer or packer shall appear on the container.

However, lot identification and the name and address of the manufacturer or packer may be replaced by an identification mark, provided that such a mark is clearly identifiable with the accompanying documents.

## 8. METHODS OF ANALYSIS AND SAMPLING

**All the methods referenced in this appendix must be applied in its last revision**

### Sampling

According to ~~ISO 661:1989~~ or ISO 5555

### Sample preparation

According to ISO 661

### Determination of organoleptic characteristics

According to COI/T.20/Doc. n° 15.

### Determination of free acidity

According to ISO 660 or AOCS Cd 3d-63 (03) or COI/T.20/Doc.n°34.

### Determination of peroxide value

According to ISO 3960 or AOCS Cd 8b-90 (03) or COI/T.20/Doc.n°35.

### Determination of absorbency in the ultraviolet region

According to COI/T.20/Doc. n° 19 or ISO 3656 or AOCS Ch 5-91 (01).

### Determination of the content of fatty acid ethyl esters - FAEE

According to COI/T.20/Doc. N° 28

### Determination of fatty acid composition and its trans isomers

According to COI/T.20/Doc. n° ~~2433~~ or ~~ISO 5508:1990~~ or AOCS Ch2-91 (02) or AOCS Ce 1f-96(02) or ISO 12966-2 or ISO 12966-4

~~Sample preparation ISO 5509:2000 or AOCS Ce 2-66(97)~~

### Determination of ~~trans fatty acid content~~

~~According to COI/T.20/Doc.n°17 or ISO 15304:2002 or AOCS Ce 1f-96(02)~~

### Determination of sterol composition and content and erythrodiol and uvaol

According to COI/T.20/Doc. n° ~~4030~~ or ISO 12228-2 or AOCS Ch 6-91 (97).

### Determination of waxes content

According to COI/T.20/Doc. n° ~~4828~~ or AOCS Ch 8-02 (02)

### Determination of stigmastadienes



According to COI/T.20/Doc. n° 11 or ISO 15788-1 or ISO 15788-2 or AOCS Cd 26-96 (03).

**Calculation of the difference between the actual and theoretical ECN 42 triglyceride content**

According to COI/T.20/Doc. n° 20 or AOCS Ce 5b-89 (97).

**Determination of 2-glyceryl monopalmitate content**

**According to COI/T.20/Doc. N°23**

**Determination of alpha-tocopherol**

According to ISO 9936

**Detection of traces of halogenated solvents**

According to ~~COI/T.20/Doc. N° 8~~ **ISO 16035**

## OTHER QUALITY AND COMPOSITION FACTORS

These quality and composition factors are supplementary information to the essential composition and quality factors of the standard. A product, which meets the essential quality and composition factors but does not meet these supplementary factors, may still conform to the standard.

### 1. QUALITY CHARACTERISTICS

#### Moisture and volatile matter

#### Maximum level

|   |         |
|---|---------|
| Virgin olive oils   | ≤ 0.2 % |
| Refined olive oil   | ≤ 0.1 % |
| <del>[Olive oil]</del> [Olive oil composed of refined olive oil and virgin olive oils]                      | ≤ 0.1 % |
| Refined olive-pomace oil  | ≤ 0.1 % |
| <del>[Olive-pomace oil]</del> [Olive-pomace oil composed of refined olive pomace oil and virgin olive oils] | ≤ 0.1 % |

#### Insoluble impurities:

|   |          |
|---|----------|
| Virgin olive oils   | ≤ 0.1 %  |
| Refined olive oil   | ≤ 0.05 % |
| <del>[Olive oil]</del> [Olive oil composed of refined olive oil and virgin olive oils]                      | ≤ 0.05 % |
| Refined olive-pomace oil  | ≤ 0.05 % |
| <del>[Olive-pomace oil]</del> [Olive-pomace oil composed of refined olive pomace oil and virgin olive oils] | ≤ 0.05 % |

#### Trace metals:

|             |                    |
|-------------|--------------------|
| Iron (Fe)   | ≤ <b>3.0</b> mg/kg |
| Copper (Cu) | ≤ 0.1 mg/kg        |

#### Organoleptic characteristics:

Virgin olive oils: See Section 3 of Standard.

**IT WILL BE DISCUSSED IF THIS TABLE IS MOVED TO SECTION 3 OF THE MAIN BODY OF THE STANDARD**

|   | Odour   | Taste   | Colour                          |
|---|---|---|---------------------------------|
| Refined olive oil   | acceptable <sup>[(*)]</sup>                         | acceptable <sup>[(*)]</sup>                         | light yellow                    |
| <del>[Olive oil]</del> [Olive oil composed of refined oliveoil and virgin olive oils]                       | good <sup>[(**)]</sup>                              | good <sup>[(**)]</sup>                              | light yellow to green           |
| Refined olive-pomace oil  | acceptable <sup>[(*)]</sup>                         | acceptable <sup>[(*)]</sup>                         | light yellow to brownish yellow |
| <del>[Olive-pomace oil]</del> [Olive-pomace oil composed of refined olive pomace oil and virgin olive oils] | <del>acceptable</del> <b>good</b> <sup>[(**)]</sup> | <del>acceptable</del> <b>good</b> <sup>[(**)]</sup> | light yellow to green           |

[(\*)] Acceptable: with no rancidity symptoms] Pending on a more precise definition

[(\*\*)] Good: fruity and with no rancidity symptoms] Pending on a more precise definition

**Appearance at 20°C for 24 hours:**

Refined olive oil, olive oil,

Refined olive-pomace oil, olive-pomace oil Limpid**2. COMPOSITION CHARACTERISTICS CHEMICAL AND PHYSICAL CHARACTERISTICS****Saturated fatty acid at the 2-position in the triglyceride (sum of palmitic & stearic acids):**

|  | Maximum level |
|--|---------------|
| Virgin olive oils  | 1.5%          |
| Refined olive oils   | 1.8%          |
| [Olive oil] [Olive oil composed of refined olive oil and virgin olive oils]                      | 1.8%          |
| Refined olive-pomace oil   | 2.2%          |
| [Olive-pomace oil] [Olive-pomace oil composed of refined olive pomace oil and virgin olive oils] | 2.2%          |

**3. CHEMICAL AND PHYSICAL CHARACTERISTICS**

|  |             |
|--|-------------|
| Relative density (20°C/water at 20 °C) | 0.910-0.916 |
|--|-------------|

**Refractive index ( $n_D^{20}$ )**

|  |               |
|--|---------------|
| Virgin olive oils<br>Refined olive oil<br>[Olive oil] [Olive oil composed of refined olive oil and virgin olive oils]        | 1.4677-1.4705 |
| Refined olive-pomace oil<br>[Olive-pomace oil] [Olive-pomace oil composed of refined olive pomace oil and virgin olive oils] | 1.4680-1.4707 |

**Saponification value (mg KOH/g oil):**

|  |         |
|--|---------|
| Virgin olive oils<br>Refined olive oils<br>[Olive oil] [Olive oil composed of refined olive oil and virgin olive oils]       | 184-196 |
| Refined olive-pomace oil<br>[Olive-pomace oil] [Olive-pomace oil composed of refined olive pomace oil and virgin olive oils] | 182-193 |

**Iodine value (Wijs method)**

|  |       |
|--|-------|
| Virgin olive oils<br>Refined olive oils<br>[Olive oil] [Olive oil composed of refined olive oil and virgin olive oils]       | 75-94 |
| Refined olive-pomace oil<br>[Olive-pomace oil] [Olive-pomace oil composed of refined olive pomace oil and virgin olive oils] | 75-92 |

**Unsaponifiable matter:**

|  |           |
|--|-----------|
| Virgin olive oils<br>Refined olive oil<br>[Olive oil] [Olive oil composed of refined olive oil and virgin olive oils]        | ≤ 15 g/kg |
| Refined olive-pomace oil<br>[Olive-pomace oil] [Olive-pomace oil composed of refined olive pomace oil and virgin olive oils] | ≤ 30 g/kg |

**Absorbency in ultra-violet K232**

|                        |               |
|------------------------|---------------|
| Extra virgin olive oil | $\leq 2.50^4$ |
| Virgin olive oil       | $\leq 2.60^4$ |

**4. METHODS OF ANALYSIS AND SAMPLING**

**All the methods referenced in this appendix must be applied in its last revision**

**Determination of moisture and volatile matter**

According to ISO 662:~~1998~~

**Determination of insoluble impurities in light petroleum**

According to ISO 663 :~~2000~~

**Detection of trace metals (iron, copper)**

According to ISO 8294 (**graphite furnace**)~~or AOAC 990:05~~ or **ISO 21033 (Inductively coupled plasma optical emission spectroscopy)**

**Determination of relative density**

According to ~~IUPAC 2.101, with the appropriate conversion factor~~ **ISO 6883 or AOCS Cc 10c-95**

**Determination of refractive index**

According to ~~ISO 6320:2000 or AOCS Cc 7-25 (02).~~

**Determination of saponification value**

According to ~~ISO 3657:2002~~ or AOCS Cd 3-25 (03).

**Determination of iodine value**

According to ~~ISO 3961:1996 or AOAC 993.20 or AOCS Cd 1d-92 (97).~~

**Determination of unsaponifiable matter**

According to ISO 3596 or ISO 18609 or AOCS Ca 6b-53 (01).

**~~Determination of the fatty acids in the 2-position of the triglycerides~~**

According to ~~ISO 6800:1997 or AOCS Ch 3-91 (97).~~

**~~Determination of the organoleptic characteristics~~**

According to ~~COI/T.20/Doc. n° 15.~~

**Determination of the absorbency in ultra-violet – K<sub>232</sub>**

According to COI/T.20/Doc. n° 19 or ISO 3656 or AOCS Ch 5-91 (01).

**Sampling**

According to ~~ISO 661: 1989 and ISO 5555: 2001.~~

<sup>4</sup> The country of retail sale may require compliance with these limits when the oil is made available to the end consumer.

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