CODEX ALIMENTARIUS COMMISSION

Food and Agriculture Organization of the United Nations

World Health Organization

Viale delle Terme di Caracalla, 00153 Rome, Italy - Tel: (+39) 06 57051 - E-mail: codex@fao.org - www.codexalimentarius.org

Agenda Item 4 **CRD02**

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)

REPORT OF THE PHYSICAL WORKING GROUP

Background

1. The physical working group (pWG) chaired by Spain and co-chaired by Argentina and Canada met on February 23, 2019 before the 26th Session of the CCFO to consider the eWG report and comments received contained in documents CX/FO 19/26/4 Add.1& Add.2; CRD6; CRD7 . The Proposed Draft Revision to the Standard in hereby attached as Annex I.Representatives from 15 Codex member countries including the European Union, and 2 observer organization participated (Annex II)

Conclusion and Recommendation

2. The pWG discussed the proposed draft revisions section by section. There was consensus in many areas as follows:

SECTION 3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

- **DESIGNATIONS AND DEFINITIONS**
    - For all categories of olive oils and olive-pomace oils, to use only one decimal place to express the free acidity;
    - To add the words “physicochemical and organoleptic” to the definitions of virgin oils;
    - To remove the ordinary virgin olive oil category;
    - To change the designation of “Olive oil” to “Olive oil composed of refined olive oil and virgin olive oils”;

Recommendation 1

The WG recommends that CCFO26 endorses the proposed a) amendments to the definitions for Extra Virgin Olive Oil and Virgin Olive oil to include “physicochemical and organoleptic” b) the changes of the designation of Olive oil to “Olive oil composed of refined olive oil and virgin olive oils”; c) deletion of the ordinary virgin olive oil category; d) use of one decimal place to express the free acidity for all categories of olive oils and olive-pomace oils.

- **Organoleptic characteristics (odour and taste) of virgin olive oils**
    - To add one decimal place to the median of fruity attribute
- **Fatty acid composition as determined by gas chromatography (% total fatty acids)**
    - Adopt the new ranges for fatty acids C14:0, C17:0, C17:1, C18:2 and C20:1
- **Content of 2-glyceryl monopalmitate (%)**
    - To adopt the parameter of 2-glytceryl monopalmitate and its limits for the different categories;

Waxes content

- To adopt the new limit for waxes content and to add a footnote for calculating waxes content for non-virgin oils

- **Stigmastadienes content**
  - To adopt a new limit of 0'05 mg/kg
- **Peroxide value (milliequivalents of active oxygen/kg oil)**
  - To add one decimal place to the expression of results;
- **Absorbancy in the ultraviolet region**
  - To adopt a new limit for K_{270} for the refined olive oil and Olive oil composed of refined olive oil and virgin olive oils categories;

Recommendation 2

The WG recommends that CCFO26 endorses the proposed changes to the above mentioned characteristics for olive oils i.e. Organoleptic characteristics (odour and taste) of virgin olive oils; Fatty acid composition – the new ranges for fatty acids in C14:0, C17:0, C17:1, C18:2 and C20:1; Content of 2-glyceryl monopalmitate (%); wax content; Stigmastadienes content; Peroxide value and Absorbancy in the ultraviolet region

SECTION 8 METHODS OF ANALYSIS AND SAMPLING

5. The pWG noted that there was an ongoing review and updating of the *Recommended Methods of Analysis and sampling* (CXS 234-1999) by CCMAS, and that CCMAS agreed to proceed with the update on the workable package for fats and oils. It was agreed that the list of methods of analysis in section 8 be forwarded to the CCMAS for consideration during the review.

Recommendation 3

The WG recommends that CCFO26 endorses the recommendation to forward i) the proposed draft new methods to CCMAS for endorsement; ii) the list of the proposed draft methods (old and new/deletions) to CCMAS for consideration during the review and updating of the methods for Fats and Oils .

APPENDIX

- To add one decimal place to the iron content and insoluble impurities of virgin oils

Recommendation 4

The WG recommends that CCFO26 endorses the proposed changes to add one decimal place to iron content and insoluble impurities of virgin oils

4. There was no consensus on several provisions and these were kept in square brackets and these include the following:

Matters outstanding in Section 3. Essential composition and quality factors

- Definition for Refined olive oil; The EWG proposed two options - option 1 as status quo and option 2 with text on refining methods, and both options are acceptable. The EWG recommended that the plenary considers both options with a view to agree on one of these
- Whether or not to remove the Footnote 1 mentioned in the definition of refined olive oil and refined olive-pomace oil considering this may be a trade barrier. The Chair and Co-chairs of PWG would like to recommend that Footnote 1 be removed. However discussion is needed at the plenary before this can be done.
- For the blends of refined olive oil and refined olive pomace oil with virgin olive oils, whether or not to make a reference to the organoleptic characteristics; It was noted that this was an important issue to discuss in the new eWG (if considered to continue working) because it's quite difficult an agreement at this moment.

The PWG recommended that more discussion was needed on this topic and this may need to be considered by a new EWG.

- Whether or not to make the designation of the olive-pomace oil more specific, and depending on decision on this item, to remove footnote 2 for this designation. The Chair and co-chairs of the PWG would like to recommend the adoption of "Olive-pomace oil composed of refined olive pomace oil and virgin olive oils" to be in alignment with the designation adopted for the blend of refined olive oil.
- To decide on the Median of Defects for virgin olive oil between ≤2.5 and ≤3.5 with a note on the error of the method. The PWG noted that this important issue must be discussed in the plenary to try to seek an agreement, and if there is no consensus it could be included in the terms of reference of the new eWG.
- To lower the limit of palmitic acid from 7.5 % to 7.0 % and oleic acid from 55.0 % to 53.0 %, as requested by some producing countries. It is important to remember that the goal of the Codex Alimentarius is to include authentic oils from member countries, with varying climatic, geographic and agricultural conditions. Therefore, the Chair and Co-chairs recommend to adopt the revised limits if there are no objective reasons.
- To adopt the decision tree on Δ7-stigmastenol. This is an important issue that needs to be discussed at plenary. The aim of this decision tree is to include genuine oils that fall outside of the limit of the standard due to various factors. The Chair and co-chairs recommend to adopt the decision tree if there are no objective reasons against it. However, if there is no consensus, this can be included in the work of the eWG.
- To include the new parameter on Fatty Acid Ethyl Esters (FAEE) for extra virgin olive oil. This is an important quality parameter to be included in the standard. There is no agreement at the moment to include this parameter in the body of the standard, however, there is a suggestion to include it in the appendix in order to reach a consensus. If there is no agreement on this issue in plenary, it can be included in the TORs of a new eWG .

6. The pWG also discussed new issues raised by some delegations. The outcome of these discussions is as follows:

- Request of a definition of Lampante Olive Oil (Brazil) - The proposal was rejected based on the section's 1 Scope, which states the standard applies to olive oils and olive-pomace oils presented in state for human consumption.
- Campesterol and waxes content (Peru)-It was considered not to open the issue at this time but in the next eWG.
- Fatty acids and sterols (Syria)-These proposals have considered in the actual draft revision

Recommendation 5

The PWG recommends that CCFO26, considers the above mentioned issues that it was not able to resolve.

The Working Group also agreed that more work need to be undertaken on some of the proposed new provisions like DAGs, PPP, FAEE and the was need to collect and analyse data

Recommendation 6

The WG recommends that CCFO26 establishes an EWG with the following Terms of Reference

i. Consider the parameters kept in [square brackets] with a view to reach consensus;

ii. Collect available data and information on DAG's, PPPs, FAEE's and to study ways of how these could be taken into account in the CODEX STAN 33-1981.

iii. To study and discuss the data provided by the IOC on the linolenic acid, and propose a possible limit for this provision for inclusion CXS 33-1981.

iv. To discuss other issues raised by the members related to section 3 and 8 and appendix: Lampante oil, campesterol content, waxes content for blends of refined oils and virgin oil, to review the format of table's in the standard.

ANNEX I

PROPOSED DRAFT REVISION TO THE *STANDARD FOR OLIVE OILS AND OLIVE POMACE OILS* (CXS 33-1981): REVISION TO SECTIONS 3, 8 AND APPENDIX

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 oil*s 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 0.8grams 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 **physicochemical and organoleptic** characteristics 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~~[1]

[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 0.3 grams per 100 grams and its other characteristics correspond to those laid down for this category[1]]

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 0.3 grams per 100 grams and its other characteristics correspond to those laid down for this category]

~~***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 [*]* correspond to those laid down for this category.[2]

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 0.3 grams per 100 grams and its other characteristics *[physicochemical and organoleptic]* correspond to those laid down for this category[1].

[~~***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 *[*] correspond to those laid down for this category.[2]

---

[1] 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]*

[[2]The country of retail sale may require a more specific designation.]

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**.0**	~~Me >~~ 0**.0**
Virgin olive oil	~~0 < Me[≤ 2.5]~~[**≤3.5]**	~~Me >~~ 0**.0**
~~[Ordinary virgin olive oil]~~	~~[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	[~~Olive oil~~] [*Olive oil composed of refined olive oil and virgin olive oils]* Refined olive oil	[~~Olive-pomace oil~~] [*Olive-pomace oil composed of refined olive pomace oil and virgin olive oils]* Refined olive-pomace oil
Fatty acid			
C14:0	0.0 – ~~0.05~~ **0.03**	0.0 – ~~0.05~~**0.03**	0.0 – ~~0.05~~**0.03**
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 – ~~0.3~~**0.4**	0.0 – ~~0.3~~**0.4**	0.0 – ~~0.3~~**0.4**
C17:1	0.0 – ~~0.3~~**0.6**	0.0 – ~~0.3~~**0.6**	0.0 – ~~0.3~~**0.6**
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	**2.5**~~3.5~~ – 21.0	**2.5**~~3.5~~ – 21.0	**2.5**~~3.5~~ – 21.0
C18:3[3]			
C20:0	0.0 – 0.6	0.0 – 0.6	0.0 – 0.6
C20:1	0.0 – ~~0.4~~**0.5**	0.0 – ~~0.4~~**0.5**	0.0 – ~~0.4~~**0.5**
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
Trans 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

Content of 2-glyceryl monopalmitate (%)

Virgin olive oils **~~[Olive oil~~]** ***[Olive oil composed of refined olive oil and virgin olive oils]***	**C16:0≤14:0 %; 2P≤0.9 %** **C16:0>14:0 %, 2P≤1.0 %**
Refined olive oil	**C16:0≤14:0 %; 2P≤0.9 %** **C16:0>14:0 %, 2P≤1.1 %**
Refined olive-pomace oil	**≤1.4%**
[~~Olive-pomace oil~~]* ***[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~~**for olive oils** ≤ 0.2 for olive-pomace oils

[3] 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.

Campesterol	≤ 4.0[(a)]
Stigmasterol	< campesterol
Δ7-stigmastenol	≤ 0.5 [**[(b)]**]
Apparentβ-sitosterol[(c)] ~~Beta-sitosterol + delta-5-avenasterol +delta-5-23-stigmastadienol + clerosterol + sitostanol + delta-5-24-stigmastadienol~~	≥ 93.0

[(a)] 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.

[[(b)] 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_{42} ≤|0,1|. For refined olive pomace oils values >0,5 and ≤0,7% then stigmasterol ≤1,4% and ΔECN_{42} ≤ 0.4.*]*

[(c)] Chromatographic peak composed by: Δ5,23-estigmastadienol+clerosterol+β-sitosterol+sitostanol+Δ5-avenasterol+Δ5,24-estigmastadienol.

~~Minimum~~ Value for total sterol content

~~Virgin olive oils~~ ~~Refined olive oil~~ ~~Olive oil~~	~~1,000 mg/kg~~
~~Refined olive-pomace oil~~	~~1,800 mg/kg~~
~~Olive-pomace oil~~	~~1,600 mg/kg~~
Virgin olive oils **Refined olive oil** **[~~Olive oil~~] [*Olive oil composed of refined olive oil and virgin olive oils*]**	**≥ 1,000 mg/kg**
[~~Olive-pomace oil~~] [*Olive-pomace oil composed of refined olive pomace oil and virgin olive oils]*	**≥ 1,600 mg/kg**
Refined olive-pomace oil	**≥ 1,800 mg/kg**

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

Virgin olive oils [~~Olive oil~~] *[Olive oil composed of refined olive oil and virgin olive oils*] Refined olive oil	≤ 4.5
[~~Olive-pomace oil~~] [*Olive-pomace oil composed of refined olive pomace oil and virgin olive oils*] **Refined olive-pomace oil**	**> 4.5**

Waxes content

Virgin olive oils	~~≤250 mg/kg~~**≤150 mg/kg [(d)]**
[~~Olive oil~~] [*Olive oil composed of refined olive oil and virgin olive oils]* Refined olive oil	≤ 350 mg/kg[(e)]
[~~Olive-pomace oil~~] [*Olive-pomace oil composed of refined olive pomace oil and virgin olive oils]* Refined olive-pomace oil	> 350 mg/kg[(e)]

[(d)] Sum of $C_{42}+C_{44}+C_{46}$

[(e)] Sum of $C_{40}+C_{42}+C_{44}+C_{46}$

ΔECN$_{42}$ - Maximum difference between the actual and theoretical ECN 42 triglyceride content

Virgin olive oils	**|**0.2**|**
[~~Olive oil~~] [*Olive oil composed of refined olive oil and virgin olive oils*] Refined olive oil	**|**0.3**|**
[~~Olive-pomace oil~~] [*Olive-pomace oil composed of refined olive pomace oil and virgin olive oils*] Refined olive-pomace oil	**|**0.5**|**

~~Maximum~~ Stigmastadienes content

Virgin olive oils	~~0.15~~**≤ 0.05 mg/kg**

Peroxide value (milliequivalents of active oxygen/kg oil)

Virgin olive oils	≤ 20**.0**
Refined olive oil	≤ 5**.0**
[~~Olive oil~~] [*Olive oil composed of refined olive oil and virgin olive oils*]	≤ 15**.0**
Refined olive-pomace oil	≤ 5**.0**
[~~Olive-pomace oil~~] [*Olive-pomace oil composed of refined olive pomace oil and virgin olive oils]*	≤ 15**.0**

Absorbancy in~~ultra-violet K270~~the ultraviolet region ($K_{1cm}^{\%}$)

	~~Absorbency in ultra-violet at 270 nm~~ 270nm or 268nm	~~Delta K~~ $\Delta K^{(5)}$
Extra virgin olive oil	≤ 0.22	≤ 0.01
Virgin olive oil	≤ 0.25	≤ 0.01
~~[Ordinary virgin olive oil]~~	~~[≤0.30*]~~	~~[≤0.01]~~
Refined olive oil	~~≤1.10~~**1.25**	≤ 0.16
[~~Olive oil~~] *[Olive oil composed of refined olive oil and virgin olive oils]*	~~≤0.90~~**1.15**	≤ 0.15
Refined olive-pomace oil	≤ 2 .00	≤ 0.20
[~~Olive-pomace oil~~] [*Olive-pomace oil composed of refined olive pomace oil and virgin olive oils]*	≤ 1.70	≤ 0.18

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

(5)

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

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

Others

[Fatty acid ethyl esters – FAEE (mg/kg)]

Extra virgin olive oil	**≤ 35**

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 contentof 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 and~~ ISO 5555:~~2001~~

Sample preparation

According to **ISO 661**

Determination of organoleptic characteristics

According to COI/T.20/Doc. nº 15.

Determination of free acidity

According to ISO 660 ~~1996~~, ~~amended 2003~~ or AOCS Cd 3d-63 (03) or **COI/T.20/Doc.n°34**.

Determination of peroxide value

According to ISO 3960~~:2001~~ 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. nº 19 or ISO 3656 or AOCS Ch 5-91 (01).

Determination of the content of fatty acid ethyl esters - FAEE

According toCOI/T.20/Doc. N° 28

Determination of fatty acid composition and its *trans* isomers

According to COI/T.20/Doc. nº ~~24~~**33**~~or ISO 5508:1990~~ and 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 Cc 2-66(97)~~

~~**Determination of *trans* fatty acid content**~~

~~According toCOI/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. nº ~~10~~**30** or ISO 12228;~~1999~~**-2** or AOCS Ch 6-91 (97).

Determination of waxes content

According to COI/T.20/Doc. nº ~~18~~**28** or AOCS Ch 8-02 (02)

Determination of stigmastadienes

According to COI/T.20/Doc. nº 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. nº 20 or AOCS Ce 5b-89 (97).

Determination of 2-glyceryl monopalmitate content

According toCOI/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**

Appendix

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 %
[~~Olive oil~~] [*Olive oil composed of refined olive oil and virgin olive oils]*	≤ 0.1 %
Refined olive-pomace oil	≤ 0.1 %
[~~Olive-pomace oil~~*] [Olive-pomace oil composed of refined olive pomace oil and virgin olive oils]*	≤ 0.1 %

Insoluble impurities:

Virgin olive oils	≤ 0.1**0** %
Refined olive oil	≤ 0.05 %
[~~Olive oil~~] *[Olive oil composed of refined olive oil and virgin olive oils]*	≤ 0.05 %
Refined olive-pomace oil	≤ 0.05 %
[~~Olive-pomace oil~~] [*Olive-pomace oil composed of refined olive pomace oil and virgin olive oils]*	≤ 0.05 %

Trace metals:

Iron (Fe)	≤ 3.**0** mg/kg
Copper (Cu)	≤ 0.1 mg/kg

Organoleptic characteristics:

Virgin olive oils: See Section 3 of Standard.

	Odour	Taste	Colour
Refined olive oil	acceptable[(*)]	acceptable[(*)]	light yellow
[~~Olive oil~~] *[Olive oil composed of refined oliveoil and virgin olive oils*]	good[(**)]	good[(**)]	light yellow to green
Refined olive-pomace oil	acceptable[(*)]	acceptable[(*)]	light yellow to brownish yellow
[~~Olive-pomace oil~~] [*Olive-pomace oil composed of refined olive pomace oil and virgin olive oils]*	~~acceptable~~**good**[(**)]	~~acceptable~~ **good**[(**)]	light yellow to green

[(*)*Acceptable: with no rancidity symptoms*] [without detectable rancidity]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 (20ºC/water at 20 ºC)	0.910-0.916

Refractive index (n_D^{20})

Virgin olive oils Refined olive oil [~~Olive oil~~] [*Olive oil composed of refined olive oil and virgin olive oils]*	1.4677-1.4705
Refined olive-pomace oil [~~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 Refined olive oils [~~Olive oil~~] *[Olive oil composed of refined olive oil and virgin olive oils]*	184-196
Refined olive-pomace oil [~~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 Refined olive oils [~~Olive oil~~] [*Olive oil composed of refined olive oil and virgin olive oils*]	75-94
Refined olive-pomace oil [~~Olive-pomace oil~~] [*Olive-pomace oil composed of refined olive pomace oil and virgin olive oils]*	75-92

Unsaponifiable matter:

Virgin olive oils Refined olive oil [~~Olive oil~~] *[Olive oil composed of refined olive oil and virgin olive oils]*	≤ 15 g/kg
Refined olive-pomace oil [~~Olive-pomace oil~~] [*Olive-pomace oil composed of refined olive pomace oil and virgin olive oils]*	≤ 30 g/kg

Absorbancy in ultra-violet K232

Extra virgin olive oil	≤ 2.50[4]
Virgin olive oil	≤ 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~~:1994~~ **(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 o 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)or NMKL 39 (2003).~~

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 toCOI/T.20/Doc. nº 15.~~

Determination of the absorbency in ultra-violet – K_{232}

According to COI/T.20/Doc. nº 19 or ISO 3656 or AOCS Ch 5-91 (01).

~~**Sampling**~~

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

[4] The country of retail sale may require compliance with these limits when the oil is made available to the end consumer.

ANNEX II

LIST OF PARTICIPANTS OF THE PHYSICAL WORKING GROUP

NO.	NAME	COUNTRY / ORGANISATION
1.	Juan Ramón Izquierdo Álvarez (CHAIR)	Spain
2.	María Alejandra Larre	Argentina
3.	Claudia Guillaume	Australia
4.	Paul Miller	Australia
5.	Enrico Perotti	Australia
6.	Antonia Maria De Aquino -	Brazil
7.	Ana Paula De Rezende Peretti Giometti	Brazil
8.	Mariola Rabski	Canada
9.	Grace Ramos	Canada
10.	Risto Holma	European Union
11.	Brigitte Pouyet	France
12.	Hermann Josef Brei	Germany
13.	Ludger Bruehl	Germany
14.	Outi Tyni	Germany
15.	Aiman	India
16.	S C Khurana	India
17.	Angelo Faberi	Italy
18.	Mauro Quadri	Italy
19.	Goro Maruno	Japan
20.	Shinji Sato	Japan
21.	Raizawanis Abdul Rahman	Malaysia
22.	Eng Gloria Atala Castillo Vargas	Peru
23.	Urszula Wieteska	Polland
24.	Lindsay Carter	United States of America
25.	Marie Maratos	United States of America
26.	Robert Moreau	United States of America
27.	Paul South	United States of America
28.	Richard Cantrill	United States Pharmacopeial Convention (USP)
29.	Gina Clapper	United States Pharmacopeial Convention (USP)
30.	Mercedes Fernandez Albaladejo	International Olive Oil Council (IOOC)

31.	Jaime Lillo	International Olive Oil Council (IOOC)
32.	Patrick Sekitoleko	Codex Secretariat
33.	Sarah Cahill	Codex Secretariat
34.	Myoengsin Choi	Codex Secretariat