BEFORE THE STATE OF CALIFORNIA

DEPARTMENT OF FOOD AND AGRICULTURE

In the matter of implementing Seasonal Grade and Labeling Standards for Olive Oil as approved by the Department of Food and Agriculture based upon a public hearing held on July 15, 2014	))))))))	**Order of the Department of Food and Agriculture Establishing Grade and Labeling Standards and Inspection Requirements for Olive Oil Processed in California from Olives Produced in California for the 2014-2015 Marketing Season pursuant to the Olive Oil Commission of California Law**

WHEREAS, Chapter 29, of Part 2, Division 22 of the California Food and Agricultural Code known as "Olive Oil Commission of California Law" (Commission Law) became effective on January 1, 2014, and

WHEREAS, section 79901 of the Commission Law provides that the Board of Directors of the Commission may recommend to the Secretary the adoption and amendment of olive oil grades and labeling standards, in accordance with the California Marketing Act of 1937 (Marketing Act), being Chapter 1 (commencing with Section 58601) of Part 2, Division 21 of the Code, and

WHEREAS, the Board of Directors, at its meeting on June 3, 2014, unanimously recommended to the Secretary the adoption of Grade and Labeling Standards for Olive Oil, Refined-Olive Oil and Olive-Pomace Oil (Standards), and

WHEREAS, the Department of Food and Agriculture (Department) called a duly noticed public hearing, which was held on July 15, 2014 in Sacramento, for the purpose of receiving testimony and evidence from all interested parties with respect to whether said Standards should be implemented, and

WHEREAS, the Department has carefully considered the hearing record and found that said Standards, to the extent the Standards do not conflict with existing statute: (1) are reasonably calculated to obtain the objectives sought in said standards, (2) enable olive oil

producers of this state, with the aid of the state, to correlate more effectively the marketing of olive oil with market demands for olive oil, (3) establish orderly marketing of olive oil, (4) provide uniform grading and proper preparation of olive oil for market, (5) eliminate or reduce economic waste in the marketing of olive oil, (6) restore and maintain adequate purchasing power for the producers of olive oil, and (7) protect the interests of consumers of olive oil, and

WHEREAS, the Department has determined that some of the purity parameters recommended by the Commission are less stringent than those already established in the California Health and Safety Code (Division 104, Part 6, Chapter 9, Section 112875 et seq.) and that section 11.3.7 of said Standards applies to food manufacturers, which are outside the scope of said Standards and outside the authority of the Marketing Act;

NOW, THEREFORE, the Department of Food and Agriculture of the State of California, acting pursuant to and by virtue of the authority vested in it by said California Marketing Act and said Olive Oil Commission of California Law, does hereby order that each handler in California who processes olives grown in California into a minimum of 5,000 gallons of olive oil during the marketing season, beginning July 1, 2014 and continuing through June 30, 2015, shall comply with the provisions of the California Grade and Labeling Standards for Olive Oil, Refined-Olive Oil and Olive-Pomace Oil. Said handlers shall meet the grade and labeling requirements set forth in Exhibit "A", which is attached hereto and made a part hereof, and obtain testing of its olive oil pursuant to the Sampling, Testing and Grading Methodology as set forth in Exhibit “A”. This Order shall become effective on September 26, 2014, and shall remain in effect until amended, or terminated or until June 30, 2015.

Date: September 17, 2014

Robert Maxie, Chief
Marketing Branch
Department of Food and Agriculture

2014 0917 | 1839

Exhibit "A"

STATE OF CALIFORNIA

DEPARTMENT OF FOOD AND AGRICULTURE

CALIFORNIA DEPARTMENT OF
FOOD & AGRICULTURE

Grade and Labeling Standards for Olive Oil, Refined-Olive Oil and Olive-Pomace Oil

Effective September 26, 2014

CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE

Grade and Labeling Standards for

Olive Oil, Refined-Olive Oil and Olive-Pomace Oil

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1.0 SCOPE

Pursuant to Chapter 29, Part 2, Division 22 of the California Food and Agricultural Code (section 79800 et seq.) these standards apply to California handlers of olives that are processed into olive oils, refined-olive oils and olive-pomace oils in the amount of 5,000 gallons or more during the period beginning July 1 through June 30 of any year and who sell their oils into the commercial channels of trade. Handlers who process and/or market less than 5,000 gallons of olive oil during any year defined above are deemed to be engaged in casual sales of olive oil and are not subject to these standards.

These standards:

(a) define grades of olive oils, refined-olive oils and olive-pomace oils;
(b) specify purity parameters and quality parameters for these grades;
(c) establishes requirements for labeling and packaging; and
(d) list acceptable methods of analysis.

2.0 OBJECTIVE

The purpose of these standards are to:

(a) ensure the quality of oil produced from olives in California,
(b) enhance the continued growth of olive oil production through greater consumer and trade confidence in the consistent, high quality of California olive oils, and
(c) provide the producers, handlers, buyers and consumers of California oil with reliable and trustworthy information concerning the quality and grade of the product.

3 .0 PRODUCT DESCRIPTION AND DEFINITIONS

3.1 OLIVE OIL

Olive oil is the oil obtained solely from the fruit of the olive tree (*Olea europaea L.*), solely by mechanical or other physical means under conditions, including thermal conditions, that do not lead to alterations in the oil, and which has not undergone any treatment other than washing, crushing, malaxing, decantation, pressing, centrifugation, and filtration and to the exclusion of oils obtained using solvents or re-esterification processes and of any mixture with oils of other kinds.

3.2 REFINED-OLIVE OIL

Refined-olive oil is oil obtained from olive oil by refining methods including but not limited to; degumming, neutralization, bleaching, and/or deodorization that do not lead to alterations in the initial glyceridic structure (basic glycerin-fatty acid structure) and to the exclusion of oils obtained using solvents or re-esterification processes and of any mixture with oils of other kinds.

3.3 OLIVE-POMACE OIL

Olive-pomace oil is the oil obtained by treating olive pomace (the product remaining after the mechanical extraction of olive oil) with solvents or other physical treatments, to the exclusion of oils obtained by synthetic processes or by re-esterification processes and mixture with oils of other kinds.

3.4 REFINED OLIVE-POMACE OIL

Refined olive-pomace oil is the oil obtained from crude olive-pomace oil by refining methods including but not limited to; degumming, neutralization, bleaching, and/or deodorization that do not lead to alterations in the initial glyceridic structure (basic glycerin-fatty structure) and to the exclusion of oils obtained by synthetic processes or by re-esterification processes any mixture with oils of other kinds.

4.0 GRADES OF OLIVE OIL, REFINED-OLIVE OIL, AND OLIVE-POMACE OIL

4.1 GRADES OF OLIVE OIL

Olive oils are graded based on the criteria outlined in these standards, as appropriate. The hierarchy for grades of olive oil is extra virgin olive oil, virgin olive oil, and crude olive oil.

4.1.1 **Extra Virgin Olive Oil** is olive oil that has a free acidity, expressed as free oleic acid, of not more than 0.5 grams per 100 grams, a median of defects equal to 0, and the other characteristics which correspond to the limits fixed for this grade in these standards. Extra Virgin olive oil is fit for consumption without further processing.

4.1.2 **Virgin Olive Oil** is olive oil that has a free acidity, expressed as free oleic acid, of not more than 1.0 grams per 100 grams, a median of defects equal to or less than 2.5, and the other characteristics which correspond to the limits fixed for this grade in these standards. Virgin olive oil is fit for consumption without further processing.

4.1.3 **Crude Olive Oil** is olive oil that has a free acidity, expressed as free oleic acid, of more than 1.0 grams per 100 grams or a median of defects greater than 2.5 and other characteristics which correspond to those fixed for this grade in these standards. Crude olive oil is not fit for human consumption without further processing and is intended to be used for refining or for technical use. **NOTE: These criteria are not required to be concurrent for crude olive oil, one is sufficient.**

4.2 GRADES OF REFINED-OLIVE OIL

Refined-olive oils are graded based on the criteria outlined in these standards as appropriate. The hierarchy of grades from highest to lowest is refined-olive oil blend and refined-olive oil. Refined-olive oil blend and refined-olive oil fall below the olive oil category but above the olive-pomace category in terms of hierarchy.

4.2.1 Refined-Olive Oil Blend Composed of refined-olive oil and virgin (or extra virgin) olive oil is composed of refined-olive oil and olive oil fit for consumption without further processing. It has a free acidity, expressed as free oleic acid, of not more than 0.8 grams per 100 grams, a median of defects equal to or less than 2.5, and its other characteristics correspond to those fixed for this grade in these standards. Refined-olive oil blend shall not be labeled as "olive oil". The addition of alpha-tocopherol is permitted.

4.2.2 Refined-Olive Oil is oil obtained from olive oil by refining methods including deodorization that do not lead to alterations in the initial glyceridic structure. Refined-olive oils have a free acidity, expressed as free oleic acid, of not more than 0.3 grams per 100 grams, and other characteristics that correspond to those fixed for this grade in these standards.

4.3 GRADES OF OLIVE-POMACE OIL

Olive-pomace oils are graded below the quality of olive oil and refined-olive oil. Olive-pomace oils are graded based on the minimum criteria outlined in table 1, as appropriate. The hierarchy for grades from highest to lowest is refined olive-pomace oil blend, refined olive-pomace oil, and crude olive-pomace oil. Crude olive-pomace oil must be refined before consumption. Olive-pomace oils shall not be labeled as "olive oil". Olive-pomace oils fall below both olive oil and refined olive oil in terms of hierarchy.

4.3.1 Refined Olive-Pomace Oil Blend Composed of refined olive-pomace oil and virgin (or extra virgin) olive oils is the oil composed of a blend of refined olive-pomace oil and olive oils fit for consumption without further processing. It has a free acidity, expressed as oleic acid of not more than 0.8 grams per 100 grams, a median of defects equal to or less than 2.5, and its other characteristics correspond to those fixed for this grade in these standards.

4.3.2 Refined Olive-Pomace Oil is the oil obtained from crude olive-pomace oil by refining methods that 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 fixed for this grade in these standards.

4.3.3 Crude Olive-Pomace Oil is the olive-pomace oil whose characteristics correspond to those fixed in these standards. Olive pomace-oil that falls into this classification shall not be graded above "Crude Olive-Pomace Oil" (this is a limiting rule). It is intended for refining for use for human consumption or for purposes other than food use.

5.0 DEFINITIONS OF TERMS

For the purpose of these standards the following definitions apply.

5.1 Absorbency in Ultraviolet (UV). Spectrophotometric test which examines the oil and measures the absorption under ultraviolet light. These absorptions are expressed as K (extinction coefficient) for the specified wavelength. The wave regions examined, 232 nanometers (nm) to calculate K232 and 270 nm to calculate K270 and 264-274 to calculate delta K (ΔK). This test provides information on the quality of the oil, state of preservation, and changes brought through processing.

5.2 Apparent β-sitosterol. The sum of the concentrations of β-sitosterol, Δ-5avenasterol, Δ-5,23-stigmastadienol, Δ-5,24-stigmastadienol, clerosterol, and sitostanol.

5.3 Aroma. A volatilized chemical compound that is perceived by olfaction.

5.4 Cold pressed. Olive oil obtained by pressing crushed olives with a mechanical, hydraulic, or centrifugal press at a temperatures that does not lead to significant thermal alterations.

5.5 Cold extracted. Olive oil obtained by separating the oil by any mechanical or other physical means at a temperature that does not lead to significant thermal alterations.

5.6 Desmethylsterol Composition. A test used to indicate the origin and purity of the Oil, reported as Total Sterols.

5.7 Diacylglycerol (DAG). A glyceride consisting of two fatty acids chains covalently bonded to a glycerol molecule through ester linkages. In mechanically extracted olive oils, DAGs are present in a range of 1% to 3% and they are found as 1,2- and 1,3- isomers.

5.8 Equivalent Carbon Number 42 (ECN 42). The determination of the difference between the actual Equivalent Carbon Number triacylglycerol content of the oil molecules determined by High Performance Liquid Chromatography (HPLC) and the theoretical amount of ECN 42 triacylglycerol using fatty acid composition. It is used for the detection of seed oils and verifies authenticity and origin of oils.

5.9 Erythrodiol and Uvaol. Two triterpene dialcohol components found in olive oil and olive-pomace oil. The levels present differentiate oils that were physically extracted from oils that were produced by solvent extraction.

5.10 First extraction. First mechanical process to separate the oil from the olive paste by centrifugation, decantation, or pressing. This does not include the second mechanical extraction or solvent extraction used to chemically separate the oil remaining in the pomace.

5.11 Flavor. The sensory impression of oil, determined mainly by the senses of taste and smell. Refers to the typical flavor of olive oil produced from olives and the degree of positive or negative attributes as listed in sections 5.17-5.23.

5.12 Free fatty acid content/free acidity. Expressed as a percentage by weight of grams per 100 grams, as free oleic acid. The free fatty acid is a measure of the quality of the oil, and reflects the care taken in producing the oil and the quality of the in-coming fruit.

5.13 Handler. A "Handler" is a person who engages, in this state, in the operation of marketing olive oil that he or she has produced, or purchased or acquired from an olive producer, or that he or she is marketing on behalf of an olive producer, whether as an owner, agent, employee, broker, or otherwise.

5.14 Initial glyceridic structure. The pattern of mono-, di-, and tri-glycerides present in olive oils or crude olive-pomace oils as extracted prior to any refining process.

5.15 Lot. A lot is a quantity of oil contained in one or more vessels that is declared by the handler to have uniform characteristics and that is marked in accordance with section 11.3.8 of these standards.

5.16 Malaxing. Malaxing is the mechanical mixing of the olive paste after crushing of the olives. Malaxing serves to break down emulsions and cell walls in order to facilitate the extraction of the oil.

5.17 Median of defects. (Md). A calculation of the median score of the oils negative flavor and aroma attributes according to the method in section 9.12 or an equivalent method according to section 9.1.

5.18 Median of defects-Fusty. A flavor defect attributable to poor storage conditions usually promoting the bacterial growth of the *Clostridium* and *Pseudomonas* genera.

5.19 Median of defects-Muddy-sediment. A flavor defect caused by the storage of olives in contact with oil sediment for long periods of time giving the oil a putrid flavor and aroma. The resulting oil has moldy aroma.

5.20 Median of defects-Musty. A flavor defect occurring when low temperatures and high humidity promote mold growth, mainly of the *Aspergillus* and *Penicilium* genera.

5.21 Median of defects-Rancid. A flavor defect caused by the oxidation of the oil and subsequent formation of aldehydes during the production process or during storage giving the oil an oxidized flavor and aroma.

5.22 Median of defects-Winey-vinegary. A flavor defect caused by storage condition of the olives that causes aerobic fermentation by the growth of yeasts that produce ethanol, acetic acid, and ethyl acetate.

5.23 Median of Fruity (Mf). A calculation of the median score of the intensity of the positive fruity characteristics of the oil according to the method in section 9.12 or an equivalent method according to section 9.1.

5.24 Monopalmitate (2-Glyceryl) content determination. A test used to determine if oil has been re-esterified by synthetic means or by the addition of animal fat.

5.25 Organoleptic analysis. An analysis based on flavor and aroma characteristics.

5.26 **Peroxide value.** A measure of the oxidation of oil expressed as milliequivalents of active oxygen per kilogram of oil.

5.27 **Pressing.** An oil extraction method consisting of pressing the malaxed paste utilizing a hydraulic or centrifugal press.

5.28 **Producer.** A "Producer" is any person that produces or causes to be produced olives that are processed into olive oil in the amount of 5,000 gallons or more during the marketing season and that shall upon request of the commission provide proof of commodity sale.

5.29 **Pyropheophytin a.** A degradation product of Chlorophyll a that results from the thermal or age related degradation of the oil.

5.30 **Refining.** A process in which oil undergoes treatment using but not limited to the following, heat (typically stripping steam) or chemicals (typically caustic soda or sodium carbonate) in combination with heat. Soft Column refining, also sometimes known as deodorization, is a type of refining using lower temperatures under vacuum often used to neutralize flavor and aroma.

5.31 **Shelf Life.** A date on the container that signifies the end of the period during which the intact package of oil, if stored in accordance with stated storage conditions, will retain any specified qualities for which express or implied claims have been made. Terminology used on packaging can appear as "Best Before", "Best By", "Best if Used By", etc.

5.32 **Sterols.** A subgroup of steroids with a hydroxyl group at the 3-position of the A-ring. Sterols comprise one of many minor constituents of oils that are characteristic indicators of impurity.

5.33 **Trans fatty acid.** A group of compounds consisting of all the geometrical isomers of monounsaturated and polyunsaturated fatty acids having one or more non-conjugated carbon-carbon double bond in the trans configuration interrupted by at least one methylene group. As they are not present in olive oil in its natural state their presence indicates if processing such as deodorization or de-coloring has taken place.

5.34 **Triglyceride.** A major component of oil comprised of an ester of three fatty acids and glycerol, also known as triacylglycerol.

5.35 **Wax content.** A minor component of olive oil that is found in the skin of the olive fruit.

6.0 QUALITY AND PURITY PARAMETERS

6.1 The quality parameters and limits for grades of olive oil, refined-olive oil, and olive-pomace oil shall be as set out in Table 1.

6.2 The purity parameters of olive oils, refined-olive oils, and olive-pomace oils shall be set out in Tables 2-5.

6.3 The limits established for each parameter take account of the precision values of the respective recommended methods of determination specified in section 9.

TABLE 1

QUALITY PARAMETERS

	OLIVE OIL			**REFINED-OLIVE OIL**		**OLIVE-POMACE OIL**		
Parameter	Extra Virgin olive oil	Virgin olive oil	Crude olive oil[1]	Refined olive oil blend	Refined olive oil	Refined olive pomace oil blend	Refined olive pomace oil	Crude olive pomace oil
Free Fatty Acid Content (%m/m)	≤0.5	≤1.0	>1.0	≤0.8	≤0.3	≤0.8	≤0.3	N/A
Peroxide Value (PV) (meq O_2/kg oil)	≤15.0	≤20.0	>20.0	≤15.0	≤5.0	≤15.0	≤5.0	N/A
Absorbency in ultraviolet K_{232}	≤2.40	≤2.60	>2.60	N/A	N/A	N/A	N/A	N/A
Absorbency in ultraviolet K_{270}	≤0.22	≤0.25	>0.25	≤0.90	≤1.10	≤1.70	≤2.00	N/A
Absorbency in ultraviolet Delta K	≤/0.01/	≤/0.01/	≤/0.01/	≤/0.15/	≤/0.16/	≤/0.18/	≤/0.20/	N/A
Moisture and volatile matter (MOI)(%m/m)	≤0.2	≤0.2	≤0.3	≤0.1	≤0.1	≤0.1	≤0.1	≤1.5
Insoluble impurities (INI) (%m/m)	≤0.1	≤0.1	≤0.2	≤0.1	≤0.1	≤0.1	≤0.1	N/A
Pyropheophytin a (PPPs) (%)	≤17	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,2 Diacylglycerols (DAGs) (%)	≥35	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Organoleptic Analysis Median of Defects(MeD)	=0.0	0.0<MeD≤2.5	>2.5	≤2.5	≤2.5	≤2.5	≤2.5	N/A
Organoleptic Analysis Median of Fruity(MeF)	>0.0	>0.0	N/A	>0.0	N/A	>0.0	N/A	N/A

[1] Note: These criteria are not required to be concurrent for crude olive oil, one is sufficient.

TABLE 2

PURITY PARAMETERS

	OLIVE OIL			**REFINED-OLIVE OIL**		**OLIVE-POMACE-OIL**		
Parameter	Extra Virgin olive oil	Virgin olive oil	Crude olive oil	Refined olive oil blend	Refined olive oil	Refined olive pomace oil blend	Refined olive pomace oil	Crude olive pomace oil
Total sterol Content (mg/kg)	~~≥870~~[3]	~~≥870~~[3]	~~≥870~~[3]	≥1000	≥1000	≥1600	≥1800	≥2500
Wax Content (C40+C42+C44+C46)(mg/kg)	≤250	≤250	≤300[1]	≤350	≤350	>350	>350	>350[2]
Trans fatty acid content (C 18:1 T %) (% trans fatty acids)	≤0.05	≤0.05	≤0.10	≤0.20	≤0.20	≤0.40	≤0.40	≤0.20
Trans fatty acid content (C 18:2 T % +C 18:3 T %) (% trans fatty acids)	≤0.05	≤0.05	≤0.10	≤0.30	≤0.30	≤0.35	≤0.35	≤0.10
Maximum difference between the actual and theoretical ENC 42 triacylglycerol content	≤/0.2/	≤/0.2/	≤/0.3/	≤/0.3/	≤/0.3/	≤/0.5/	≤/0.5/	≤/0.6/
Stigmastadienes content (mg/kg)	≤0.10	≤0.10	≤0.50	N/A	N/A	N/A	N/A	N/A
Content of 2-glyceryl monopalmitate (%)	~~≤1.5~~	~~≤1.5~~	~~≤1.5~~	≤1.8	≤1.8	~~≤2.2~~	~~≤2.2~~	~~≤2.2~~

[1] When the oil has wax content between 300mg/kg and 350mg/kg, it is considered a crude olive oil if the erythrodiol + uvaol content is ≤3.5% and the total aliphatic alcohol content is ≤350mg/kg.
[2] When the oil has a wax content between 300mg/kg and 350mg/kg, it is considered a crude olive-pomace oil if the erythodiol + uvaol is >3.5% and the total aliphatic alcohol content is >350mg/kg.
[3] Values between 870mg/kg and 1000mg/kg shall be subject to the traceability requirements of Section 12.

TABLE 3

FATTY ACID COMPOSITION (Expressed as % m/m Methyl Esters)		
Myristic acid	(C 14:0)	≤0.05
~~Palmitic acid~~	~~(C 16:0)~~	~~7.0-22.0~~
~~Palmitoleic acid~~	~~(C16:1)~~	~~0.25-3.5~~
Heptadecanoic acid	(C17:0)	≤0.3
~~Heptadecenoic acid~~	~~(C17:1)~~	~~≤0.5~~
Stearic acid	(C 18:0)	0.5-5.0
~~Oleic acid~~	~~(C 18:1)~~	~~50.0-85.0~~
~~Linoleic acid~~	~~(C 18:2)~~	~~2.5-22.0~~
~~Linolenic acid~~	~~(C18:3)~~	~~≤1.5~~
Arachidic acid	(C20:0)	≤0.6
~~Gadoleic acid (eicosenoic) (C20:1)~~		~~≤0.5~~
Behenic acid	(C22:0)	≤0.2[2]
Lignoceric acid	(C24:0)	≤0.2

[2] ≤ 0.3 for olive-pomace oils

TABLE 4

STEROL AND TRITERPENE DIALCOHOLS COMPOSITION (Expressed as % of Total Sterols)	
~~Cholesterol~~	~~≤0.8~~[1]
Brassicasterol	≤0.1
~~Campesterol~~	~~≤5.4~~[2]
Stigmasterol	≤1.9
~~Δ-7-stigmastenol~~	~~≤0.6~~
~~Apparent β-sitosterol~~	~~≥91.5~~[3]
~~Erythrodiol+Uvaol (olive oils/refined-olive oils)~~	~~≤5.1~~[4,5]

[1] Values between 0.5% and 0.8% shall be subject to the traceability requirements of Section 12.
[2] Values between 4.8% and 5.4% shall be subject to the traceability requirements of Section 12.
[3] Values between 91.5% and 92.5% shall be subject to the traceability requirements of Section 12.
[4] Values between 4.5% and 5.1% shall be subject to the traceability requirements of Section 12.
[5] >4.5 Erythrodiol+Uvaol for olive-pomace oils

TABLE 5

TRACE METALS (Expressed as mg/kg)	
Iron (Fe)	≤3.0
Copper (Cu)	≤0.1

7.0 FOOD ADDITIVES

7.1 Olive oils and crude olive-pomace oil. Olive oils and crude-olive pomace oils shall not contain food additives.

7.2 Refined-olive oils, olive-pomace oil and refined olive pomace oil. Tocopherols may be added to refined-olive oil, olive-pomace oil and refined olive-pomace oil to restore the natural tocopherols lost in the refining process up to a maximum level of 200mg/kg of total alpha-tocopherol in the final product. Use of tocopherols shall be in compliance with the Food and Drug Administration (FDA) 21 C.F.R. Sub Chapter B Part 170, Part 178, and Part 182 (*Food Additives, Indirect Food Additives: Adjuvants, Production Aids, and Sanitizers, and Substances Generally Recognized as Safe (GRAS)*).

7.3 Processing aids. Processing aids are allowed to be used during oil extraction to the extent allowed by the Food and Drug Administration (FDA) 21 C.F.R. Sub Chapter B Part 178 (*Indirect Food Additives: Adjuvants, Production Aids, and Sanitizers*).

8.0 CONTAMINANTS

8.1 Halogenated Solvents. The maximum permissible content for refined olive-pomace oil of each halogenated solvent is 0.1 mg/kg. The maximum permissible content of all halogenated solvents is 0.2mg/kg.

8.2 Pesticide Residues. The products covered by these standards shall comply with the maximum residual level (MRL) limits established by the U.S Environmental Protection Agency (EPA) 40 C.F.R Sub Chapter E Parts 150 to 180 (*Pesticide Programs*).

9.0 METHODS OF ANALYSIS

9.1 General
The following methods shall be used to determine the characteristics of the olive oil, refined olive oils, and olive pomace oils. Alternative methods may be used provided they have been recognized as official methods IOC, AOCS, ISO (International Organization for Standardization), or Codex Alimentarius and shown to give equivalent results. At all times the most recently published version of the listed method or their alternatives shall be used.

9.2 Sampling. According to the ISO standard 5555:2001 and Appendix A.

9.3 Preparation of the test sample. According to ISO 661 “Animal and vegetable fats and oils-Preparation of the test sample”.

9.4 Determination of the fatty acid composition. Preparation of methyl esters in accordance with AOCS Ce 2-66 or ISO 5509 or COI/T.20/Doc.24. Methyl esters of fatty acids shall be analyzed by gas chromatography in accordance with ISO 5508 or AOCS Ch 2-91.

9.5 Determination of the trans fatty acid content. According to AOCS Ch 2a-94 (Rev. 2002) or ISO 15304 or COI/T.20/Doc.17.Rev.1.

9.6 Determination of the sterol composition and total sterol content. Sterol composition and total sterol content shall be determined in accordance with ISO 12228 or COI/T.20/Doc.10.Rev.1 or AOCS Ch 6-91.

9.7 Determination of the content of erythrodiol + uvaol. Erythrodiol + uvaol content shall be determined in accordance with IUPAC no. 2.431; capillary columns are recommended or IOC/T.20/Doc. 30.

9.8 Determination of wax content. According to COI /T.20/Doc.18.Rev.2 or AOCS Ch 8-02 (Rev.2007).

9.9 Determination of the stigmastadienes content. Stigmastadienes shall be determined in accordance with AOCS Cd 26-96 or COI /T.20/Doc.11.Rev.2.

9.10 Determination of the content of 2-glyceryl monopalmitate. According to COI /T.20/Doc.23.

9.11 Determination of the difference between the actual and theoretical ECN 42 triglyceride content. The difference between the actual and theoretical ECN 42 triglyceride content shall be determined in accordance with AOCS Ce 5b-89 or COI /T.20/Doc.20.Rev.3.

9.12 Determination of organoleptic characteristics. Organoleptic characteristics shall be determined in accordance with COI/T.20/Doc. 15.Rev.2.

9.13 Determination of free fatty acid content. Free fatty acid content shall be determined in accordance with ISO 660 or AOCS Ca 5a-40.

9.14 Determination of the peroxide value. Peroxide value shall be determined in accordance with AOCS Cd 8b-90 or ISO 3960.

9.15 Determination of absorbency in ultraviolet. Absorbency in ultraviolet shall be determined in accordance with ISO 3656 or AOCS Ch 5-91 or COI/T.20/Doc.19.Rev.2.

9.16 Determination of moisture and volatile matter. Moisture and volatile matter shall be determined in accordance with ISO 662 or AOCS Ca 2c-25.

9.17 Determination of insoluble impurities in light petroleum. Insoluble impurities shall be determined in accordance with ISO 663 or AOCS Ca 3a-46.

9.18 Determination of trace metals. Determination of copper and iron by direct graphite furnace atomic absorption spectrometry shall be in accordance with ISO 8294.13

9.19 Determination of alpha-tocopherol. Tocopherols and tocotrienols contents, using high-performance liquid chromatography, shall be determined in accordance with ISO 9936.

9.20 Determination of pyropheophytins. The degradation products of chlorophylls a and a' (pheophytins a, a' and pyropheophytins) shall be determined in accordance with ISO 29841.

9.21 Determination of 1,2-Diacylglycerol content. Relative amounts of 1,2- and 1,3-diacylglycerols shall be determined in accordance with ISO 29822.

10.0 HYGIENE

10.1 Products covered by these standards shall be prepared and handled in accordance with the Food and Drug Administration (FDA) 21 C.F.R. Sub Chapter B and E Parts 110 and 589 (*Current Good Manufacturing Practices in Manufacturing, Packaging, or Holding of human food*).

11.0 PACKAGING

11.1 General. Olive oils, refined-olive oils, and olive-pomace oils intended for trade should be packaged in containers complying with the *General Principles of Food Hygiene* by the Codex Alimentarius Commission (CAC/RCP 1) and shall comply with the Food and Drug Administration (FDA) 21 C.F.R. Sub Chapter B and E Parts 110 and 589 (*Current Good Manufacturing Practices in Manufacturing, Packaging, or Holding of human food*).

11.2 Packaging materials. Only packaging materials fit for the intended use, selected to minimize the deterioration of oil quality, and selected to ensure continued compliance with the grade of the oil of the shall be used.

11.3 Labeling

11.3.1 General. In addition to the requirements set out herein handlers of olive oils, refined-olive oils and olive-pomace oils shall comply with the Food and Drug Administration (FDA) 21 C.F.R Sub Chapter A, B, D, E, F, G Part 101 (*Food Labeling*).

11.3.2 Product name. The labeling on each container shall indicate the specific grade of the product as specified and determined by these standards in section 4. The designations shall be prominent and clearly legible in the principal display panel of the label. The following are the only grade designations permitted:

(a) Extra Virgin Olive Oil
(b) Virgin Olive Oil
(c) Crude Olive Oil*
(d) Refined-Olive Oil Blend composed of refined-olive oil and virgin (or extra virgin) olive oils
(e) Refined-Olive Oil
(f) Refined Olive Pomace-Oil Blend composed of refined olive-pomace oil and virgin (or extra virgin) olive oils
(g) Refined Olive Pomace-Oil*
(h) Crude Olive Pomace-Oil*

*Note: Grades for trade only, not fit for consumption without further processing.

11.3.3 Prohibited Terminology. Indications shown on the labeling shall not mislead the purchaser as to the characteristics of the oil contained therein by attributing to it characteristics that it does not possess. Examples of designations prohibited but not limited to; "Pure", "Pure Olive Oil", "Lite", "Lite Olive Oil", "Light", "Light Olive Oil", "Extra Light", "Extra Light Olive Oil" "Extra Lite" or "Extra Lite Olive Oil", "Super Virgin" shall not be used.

11.3.4 Provenance.

(a) 100% of the oil must be from olives grown in the state of California.
(b) If reference is made to a specific region in California, then at least 85% of the oil (by weight) must be from olives grown in that region.
(c) If reference is made to a specific estate within California, then at least 95% of the oil (by weight) must be from olives grown on that estate.

11.3.5 Varietal Names. If olive varietal names are used on the label, then varietals comprising 85% of the oil by weight must be listed in their order of dominance.

11.3.6 Year of Harvest. If reference is made to a harvest date, then 100% of the olives used to make the oil must have been harvested during that time period. Because the harvest typically runs from October through January, the dating refers to it by the calendar year; for example the 2014-2015 harvest season is deemed to be the 2015 harvest. When oils from multiple years are combined and the year of harvest is indicated the label must indicate each of the harvest years contained therein. If the month and year of harvest are indicated then 100% of the oil must be from that period. If the season and year are indicted then 100% of the oil must be from that period.

~~**11.3.7 Food ingredients.** When olive oils, refined-olive oils, or olive pomace-oils are used as ingredients of food the label of the food product shall specify the grade of the oil used in accordance with section 11.3.2.~~

11.3.8 Lot identification. Each container shall be permanently marked to identify the producing factory and the lot in accordance with the relevant US and California codes. Every lot must include a date of manufacture; in either closed or open format.

11.3.9 Shelf Life and Harvest Date. Declaration of a best-before date is optional, if used must be supported by technical evidence. The Shelf Life can be displayed as but not limited to: "Best Before", "Best if Use By", "Best By". If a shelf life is declared the label shall include storage conditions necessary to ensure the validity of that date. In no case however, shall a best before date greater than two years from the date of the packaging be used. A harvest date may also be included on the label.

11.3.10 First Cold Pressing/ Cold Extraction. The indication "First Cold Pressing" Cold pressing", Cold extraction", "Cold Crushed", or similar language may be used only for "Extra Virgin Olive Oil "or "Virgin Olive Oil" extracted by mechanical means that do not lead to significant thermal alterations in the oil.

12.0 TRACEABILITY

12.1 All containers of oil shall be clearly labeled as to their contents and be identified by a lot number. The lot number shall provide the ability for the handler to identify the following:

12.1.1 The location including the address, county and assessor's parcel number(s) of the land where the olives were grown.

12.1.2 The pesticide records for that location.

12.1.3 The name of any harvesting company used in harvesting the olives

12.1.4 The name of the transportation company that transported the olives

12.1.5 Total quantity by weight of olives delivered to the mill for processing.

12.1.6 Applicable processing and quality records.

12.1.7 Total quantity of oil by weight or volume produced from the tonnage as stated in section 12.1.5.

12.1.8 Final lot numbers identified on the goods that were sold.

12.2 Product traceability documents and identification records shall be maintained and available for review. All records shall be maintained for a minimum of 3 years.

12.3 All traceability, documentation, verification, and validations shall be in accordance with 21 C.F.R Part 120 (*Hazard Analysis and Critical Control Point (HACCP) Systems*).

12.4 In the event that purity testing results are in the ranges footnoted in tables 2 and 4, the handler shall provide the documents identified in section 12.1 to the commission for review.

Appendix "A"

SAMPLING, TESTING AND GRADING METHODOLOGY FOR OLIVE OIL, REFINED-OLIVE OIL AND OLIVE-POMACE OIL

cdfa CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

Appendix A: Sampling, Testing and Grading Methodology for Olive Oil, Refined-Olive Oil and Olive-Pomace Oil

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PREFACE

The goal of the Olive Oil Commission of California is to further the objectives of these Standards by requiring mandatory testing and grading of olive oil produced in California under the jurisdiction of the Commission using accredited laboratories prior to the oil being sold . The resources necessary to achieve this goal are limited by:

- the current level of olive oil production in California;
- the lack of a local laboratory that is accredited for testing olive oil; and
- the time required to submit samples to an accredited lab off shore and to receive test results.

Therefore, a period of transition is required. This testing appendix is thus a beginning only and will develop as resources allow. The Commission is committed to full implementation for the 2016 fiscal year.

1.0 GENERAL PROVISIONS

1.1 **Applicability.** This appendix shall apply to all oil under the jurisdiction of the California Department of Food and Agriculture (CDFA) Olive Oil Commission of California (the Commission), Chapter 29 of Part 2, Division 22 of the California Food and Agricultural Code.

1.2 **Method of Sampling.** According to International Standards Organization (ISO) 5555:2001-International Standard, Animal and Vegetable Fats and Oils-Sampling as applicable.

1.3 **Controlling rule**. Where differences exist between this appendix and ISO 5555-2001 this appendix shall be controlling.

1.4 **Requirement of Sampling.** All lots of olive oil shall be sampled, tested and graded.

1.5 Sample results are only valid for 16 months from the date of testing. Oil sold after expiration of the test results must be re-sampled retested and re-graded.

2.0 DEFINITIONS

2.1.1 **Lot.** A lot is a quantity of oil contained in one or more vessels that is declared by the handler to have uniform characteristics and that is marked in accordance with section 11.3.8 of these Standards.

2.1.2 **Increment**. Per ISO 5555:2001 Section 2.3 "a quantity of fat taken at one time from one place in a lot".

2.1.3 **Bulk Sample**. Per ISO 5555:2001 Section 2.4 "quantity of fat obtained by combining the various increments from a lot in amounts proportional to the quantities they represent".

2.1.4 **Laboratory sample**. Per ISO 5555: 2001 Section 2.5 "quantity of fat obtained from the bulk sample after suitable homogenization and reduction in size which is representative of the lot and intended for laboratory examination".

2.1.5 **Standards** means the Grade and Labeling Standards for Olive Oil, Refined-Olive Oil and Olive-Pomace Oil issued pursuant to Chapter 29, Part 2 of Division 22 of the Food and Agricultural Code.

3.0 SAMPLING BY COMMISSION

3.1 Five samples will be taken at random from each handler subject to the jurisdiction of the Commission under the direction of the CDFA or by a CDFA and Commission approved independent third party (sampling party). Samples will be taken following the procedures and sampling plan in accordance with ISO 5555:2001 as applicable.

3.2 **Sample Timing.** The date of the sampling as well as which lots are to be sampled will be determined by the sampling party and shall not be disclosed prior to the sampling day to the handlers. All sampling testing and grading must be completed by March 31 of the fiscal year. All results must be reported to the Commission by the same date.

3.3 **Bulk samples per lot.** A single bulk sample is required per lot.

3.4 **Quantity and volume of laboratory sample containers per lot.** A minimum of five laboratory samples in containers of 250ml or larger are required per lot.

3.5 **Sampling technique.** The sampling technique shall be in accordance with Section 5 of ISO 5555:2001 as appropriate.

3.6 Methods of sampling shall be applicable to the container in which the oil is stored in accordance with Section 6 ISO 5555:2001**.**

3.7 Samples shall be packed and handled in accordance with ISO 5555:2001as appropriate

3.8 Samples shall contain the information identified in Section 7.2 items e, f, h, j, k, l, m, and n of ISO 5555:2001 as appropriate.

3.9 All laboratory samples shall have a tamper evident seal placed on the container and marked by the sampling party.

3.10 The maximum lot size is 200,000 gallons.

3.11 The sampling party shall send to an accredited edible oil analytical laboratory designated by the Commission three laboratory samples for each lot sampled in accordance with this section for analysis and grading based on the quality parameters in Table 1 of these Standards and for the analysis of the purity parameters as described in the following paragraph.

3.12 The Commission shall direct the sampling party to randomly select from the samples of lots taken by the sampling party from handlers a number, fixed annually, of samples to be tested for the purity parameters in tables 2-5 of these Standards at an analytical laboratory designated by the Commission.

3.13 The sampling party shall retain two containers of the laboratory sample for the purpose of replacement of a lost sample, or retesting. The laboratory samples shall be retained until the end of the fiscal year. Additional laboratory samples may be taken by sampling party and retained by the handler.

3.14 The results of the tests shall be distributed to the handler and to Commission administrator, and shall include the name of the handler. The name of the handler shall be confidential. The results shall be reported to the commissioners referenced by only the lot. The results shall include the information listed in section 5.

3.15 The Commission shall pay the cost of sampling, shipping testing, grading and reporting of the samples under this section.

4.0 SAMPLING BY HANDLERS

4.1 All handlers subject to the jurisdiction of the Commission shall be required to sample, test and grade all lots of olive oil for the quality parameters listed in Table 1 of these Standards. Sampling and testing may be done by the handler or by a laboratory chosen by the handler following an official testing method as described in section 9 of these Standards. The handler is required to assign a distinct number to each lot.

4.2 The handler shall retain two containers of the sample for the purpose of retesting. The retained samples shall be a minimum of 250ml and be retained until the end of the fiscal year in which the oil was produced.

4.3 The handler shall pay the cost of sampling, quality testing and retention of samples required under this section.

4.4 The results of the quality tests and grades assigned under this section shall be sent to the Commission administrator, and shall include the name of the handler. The results of sampling shall be reported to the commissioners. Reports shall include the lot number to the commissioners without the name of the producer or handler.

4.5 The results of the sampling testing and grading must be reported to the Commission no later than March 31 of the fiscal year of production and must include all information required by section 5.

5.0 REPORTING

5.1 The designated sampling party or the handler shall send to the Commission or its representative the following information:

- **(a)** The identifying number of each lot sampled.
- **(b)** The volume or weight of each lot.
- **(c)** The date and time each lot was sampled.
- **(d)** The percentage of all varieties in each sample to the extent known.
- **(e)** A complete copy of the laboratory report or reports.
- **(f)** The grade assigned to each sample.

6.0 GRADING

6.1 Based on the results of the testing each lot will be assigned a grade.

6.2 Lots that fail purity testing are not eligible to be graded and shall not be sold as olive oil, refined-olive oil or olive-pomace oil.

7.0 RIGHT TO REVIEW AND RETEST

7.1 Any handler is entitled to a retest of any or all lots of oil tested by the Commission; provided however that the retesting is at the sole expense of the handler.

7.2 The handler must notify the Commission of his or her desire to retest within 15 days of receipt of test results.

7.3 All retests must be done using retained laboratory samples.

7.4 The results of the retest if the same as the original test shall be final. If however the retest results in the assignment of a different grade the handler may request a third test the result of which will be final.