DRAFT 3-28-08

United States Department of Agriculture

Agricultural Marketing Service

Fruit and Vegetable Programs

Processed Products Branch

Proposed United States Standards for Grades of Olive Oil and Olive-Pomace Oil

March 28, 2008
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DISCUSSION DRAFT FOR REVISION OF THE U.S. STANDARDS FOR GRADES OF OLIVE OIL AND OLIVE-POMACE OIL

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DRAFT 3-28-08

This is the _____issue of the United States standards for Grades of Olive Oil published in the **FEDERAL REGISTER** on _____ to become effective_____. This issue supersedes the first issue, which has been in effect since March 22, 1948.

Voluntary U.S. grade standards are issued under the authority of the Agricultural Marketing Act of 1946, which provides for the development of official U.S. grades to designate different levels of quality. These grade standards are available for use by producers, suppliers, buyers, and consumers. As in the case of other standards for grades of processed fruits and vegetables, these standards are designed to facilitate orderly marketing by providing a convenient basis for buying and selling, for establishing quality control programs, and for determining loan values.

The standards also serve as a basis for the inspection and grading of commodities by the Federal inspection service, the only activity authorized to approve the designation of U.S. grades as referenced in the standards, as provided under the Agricultural Marketing Act of 1946. This service, available as on-line (in-plant) or lot inspection and grading of all processed fruit and vegetable products, is offered to interested parties, upon application, on a fee-for-service basis. The verification of some specific recommendations, requirements, or tolerances contained in the standards can be accomplished only by the use of on-line inspection procedures. In all instances, a grade can be assigned based on final product factors or characteristics.

In addition to the U.S. grade standards, grading manuals or instructions for inspection of several processed fruits and vegetables are available upon request for a nominal fee. These manuals or instructions contain detailed interpretations of the grade standards and provide step-by-step procedures for grading the product.

Grade standards are issued by the Department after careful consideration of all data and views submitted, and the Department welcomes suggestions which might aid in improving the standards in future revisions. Comments may be submitted to, and copies of standards and grading manuals obtained from:

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DRAFT 3-28-08

PROPOSED UNITED STATES STANDARDS FOR GRADES OF OLIVE OIL AND OLIVE -POMACE OIL

DRAFT

Authority: Agricultural Marketing Act of 1946, Secs. 203, 205, 60 Stat. 1087, as amended, 1090, as amended (7 U.S.C. 1622, 1624).

Note: Compliance with the provisions of these standards shall not excuse failure to comply with the provisions of the Federal Food, Drug, and Cosmetic Act, or with applicable State laws and regulations.

§52.1531 Product description.

(a) **Olive oil** is the oil obtained solely from sound and wholesome 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.

(b) **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 and mixture with oils of other kinds. Alpha-tocopherol is permitted to restore natural tocopherol lost in the refining process for refined olive-pomace and olive-pomace oil. Maximum level: 200 mg/kg of total alpha-tocopherol is permitted in the final product.

§52.1532 Types of olive oil.

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

1. Virgin olive oils fit for consumption without further processing include:

i. Extra virgin olive oil;

ii. Virgin olive oil;

2. Virgin olive oil not fit for consumption without further processing designated lampante virgin olive oil.

(b) **Olive oil**

(c) **Refined olive oil**

§52.1533 Types of Olive-pomace oil

(a) **Olive-pomace oil**

(b) **Refined olive-pomace oil**

(c) **Crude olive-pomace oil**

§52.1534 Grades of Olive Oil

Olive oils are graded based on the level of free fatty acid content and flavor and odor. The hierarchy for grades of virgin olive oil is extra-virgin olive oil, virgin olive oil, and virgin olive oil not fit for human consumption (lampante virgin olive oil). Lampante virgin olive oil is the lowest level of quality among the virgin olive oils and must be refined before consumption. Olive oil and refined olive oil fall below the virgin olive category in terms of hierarchy.

(a) **"U.S. Extra Virgin Olive Oil"** is virgin olive oil which has excellent flavor and odor (no defects and at a minimum some fruitiness) and a free fatty acid content, expressed as oleic acid, of not more than 0.8 grams per 100 grams, and meets the additional requirements as outlined in §52.1539 of this subpart.

(b) **"U.S. Virgin Olive Oil"** is virgin olive oil which has good flavor and odor and a free fatty acid content, expressed as oleic acid, of not more than 2 grams per 100 grams, and meets the additional requirements as outlined in §52.1539 of this subpart. Olive oil that falls into this classification shall not be graded above "Virgin Olive Oil" (this is a Limiting Rule).

(c) **"Virgin Olive Oil Not Fit For Consumption Without Further Processing"** sometimes designated as "**Lampante Virgin Olive Oil**," is virgin olive oil which has poor flavor and odor, a free fatty acid content, expressed as oleic acid, of more than 2.0 grams per 100 grams, and meets the additional requirements as outlined §52.1539 of this subpart. Olive oil that falls into this classification shall not be graded above "Virgin olive oil not fit for human consumption" (this is a limiting rule). It is intended for refining or for other purposes.

(d) **"U.S. Olive Oil"** is the oil consisting of a blend of refined olive oil and virgin olive oils fit for consumption **without further processing.** It has a free fatty acid content, expressed as oleic acid, of not more than 1.0 gram per 100 grams, has a slight odor and flavor characteristic of "virgin olive oil," and meets the additional requirements as outlined in §52.1539 of this subpart. Olive oil that falls into this classification shall not be graded above "Olive oil" (this is a limiting rule). The maximum level permitted of total alpha-tocopherol in the final product is 200 mg/kg.

(e) **"U.S. Refined Olive Oil"** is the olive oil obtained from virgin olive oils by refining methods that do not lead to alterations in the initial glyceridic structure (basic glycerin-fatty acid structure). It has a free fatty acid content, expressed as oleic acid, of not more than 0.3

grams per 100 grams, is flavorless and odorless and meets the additional requirements as outlined in §52.1539 of this subpart. Olive oil that falls into this classification shall not be graded above "Refined olive oil" (this is a limiting rule). The addition of Alpha-tocopherol is permitted to restore natural tocopherol lost in the refining process. The maximum level is 200 mg/kg of total alpha-tocopherol in the final product.

§52.1535 Grades of Olive-Pomace Oil.

Olive-pomace oils are graded below the quality of olive oil. The hierarchy for grades from highest to lowest is olive-pomace oil, refined olive-pomace oil, and crude olive-pomace oil. Crude olive-pomace oil is the lowest level of quality among the olive-pomace oils and must be refined before consumption. Olive-pomace oils may not be labeled as olive oil.

(a) **"U.S. Olive-Pomace Oil"** is the oil comprising a blend of refined olive-pomace oil and virgin olive oils fit for consumption without further processing. It has a free fatty acid content, expressed as oleic acid, of not more than 1 gram per 100 grams, reasonably good flavor and odor slightly characteristic of olive oil, and meets the additional requirements as outlined in §52.1539 of this subpart. Olive-pomace oil that falls into this classification shall not be graded above "Olive-pomace oil" (this is a limiting rule). This product shall not be labeled as "olive oil."

(b) **"U.S. 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 fatty acid content, expressed as oleic acid, of not more than 0.3 grams per 100 grams, no flavor and odor, and meets the additional requirements as outlined in §52.1539 of this subpart. Olive-pomace oil that falls into this classification shall not be graded above "Refined olive-pomace oil" (this is a limiting rule).

(c) **"U.S. Crude Olive-Pomace Oil"** is olive-pomace oil that meets the requirements as outlined in §52.1539 of this subpart. Olive 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 it is intended for other purposes.

§52.1536 Recommended sample unit size

(a) The sample unit size shall be 375 ml. per sample.

(b) Oil should be kept in original unopened containers, when possible.

§52.1537 Recommended fill of container.

The recommended fill of container is not incorporated in the grades of the finished product since fill of container, as such, is not a factor of quality for the purposes of these grades. It is recommended that each container be filled as full as practicable without impairment of quality.

§52.1538 Definition of Terms.

(a) Absorbency in Ultra-Violet. Spectrophotometric test which examines the olive oil and measures the absorption under ultraviolet light. These absorptions are expressed as K (extinction coefficient) for the specified wavelength. This test provides information on the quality of the oil, state of preservation, and changes brought about through processing.

(b) Aspect. A term which describes the appearance of the oil when observed after 24 hours at 20ºC (68ºF) in terms of clarity.

(c) Dimethylsterol Composition. A test used to indicate the origin and purity of the oil.

(d) Equivalent Carbon Number (ECN). A test used to determine the triacylglycerol analysis. It is used to verify authenticity and origin of oils.

(e) Erythrodiol and Uvaol. Two sterol components found in olive oil and olive-pomace oil. The levels present differentiate oils that were pressed from oils that were produced by solvent extraction.

(f) Flash Point. The temperature at which a sample begins to spontaneously burn. Refined olive oil, olive-pomace oil, and seed oils burn at a lower temperature than virgin olive oil.

(g) Flavor and Odor. Refers to the typical flavor and odor of olive oil produced from olives and the degree of positive or negative attributes, such as, nutty, sweet grass, apple as listed in (m) or musty, winey, vinegary, muddy sediments, rancidity, or any other defect listed in (l).

(h) Free Fatty Acid Content. The percent by weight expressed in grams per 100 grams, as oleic acid. The free fatty acidity is a measure of the quality of the oil, and reflects the care taken in producing the oil**.**

(i) Glyceridic Structure. The structure of an ester (any class of organic compounds corresponding to an inorganic salt formed from an acid by the replacement of hydrogen by an alkyl radical) consisting of a glycerol molecule and a fatty acid.

(j) **Limpid.** Transparently clear.

(k) **Linolenic Acid** is a fatty acid component found in olive oil. Its level is used to establish the purity of the olive oil.

(l) **Median of Defects.** A calculation of the median score from a panel of tasters or an equivalent scoring method that characterizes the negative flavor and odor attributes of olive oil, such as, but not limited to musty, fusty, winey-vinegary, muddy-sediment, and rancid.

1. **Fusty.** A flavor defect attributable to poor storage conditions of the olives, usually promoting the bacterial growth of the *Clostridium* and *Pseudomonas* genera.
2. **Muddy-sedimen**t. A flavor defect caused by storage of olives in sediment for long periods.
3. **Musty.** A flavor defect occurring when low temperatures and high humidity promote mold growth, mainly of the *Aspergillus* and *Penicilium* genera. The resulting oil has a mushroom-like odor.
4. **Rancid**. A flavor defect caused by the oxidation of the oil and subsequent formation of aldehydes during the production process giving the oil a putrid flavor and odor.
5. **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.

(m) **Median of Fruity**. A calculation of the median score from a panel of tasters or an equivalent scoring method that characterizes olive oil produced from olives, such as, but not limited to olive, apple, green, sweet, grass, nutty, tomato.

(n) **Organoleptic.** Organoleptic analysis consists of an evaluation based on flavor and odor characteristics.

(o) **Peroxide Value.** A measure of the oxidation of olive oil expressed as milliequivalents of active oxygen per kilogram of oil. The more oxidized the oil, the more peroxides are present.

(p) **Saturated fatty acid content at the 2-position in the triglycerides.** This test is used to determine if the oil has been re-esterified.

(q) **Stigmastadiene.** A steroid hydrocarbon found at low levels in virgin olive oil and crude olive-pomace oil. Analysis of its content is used for the detection of refined oils in virgin olive oil.

(r) **Sterol Analysis.** Used to detect the presence of seed oil. Sterols are one of many minor constituents of oils that are characteristic indicators of impurity of the olive oil.

(s) **Trans Fatty Acid**. When oil is partially hydrogenated it is in either the *cis* or *trans* conformation which refers to which side of the fatty acid double bond the hydrogen is on. The *trans* conformation refers to hydrogen found on opposite sides of the double bond. Olive oil is not a *trans* fatty acid because it has not been partially hydrogenated. This test is used to determine if any processing has taken place.

(t) **Triglyceride**. A component of oil formed by an ester of three fatty acids and glycerol, oleic acid being chief among them.

§52.1539 Ascertaining the grade.

The grade of olive oil or olive pomace oil may be ascertained by considering the requirements of the respective grades listed in Table I. Additional requirements, if applicable, are found in Tables II and III.

TABLE I

	US Extra Virgin Olive Oil	US Virgin Olive Oil	Lampante Virgin Olive Oil*	US Refined Olive Oil	US Olive Oil	US Crude Olive-Pomace Oil	US Refined Olive-Pomace Oil	US Olive-Pomace Oil
(a) Organoleptic Characteristics								
- Odor And Flavor	Excellent	Good	Poor	Odorless and flavorless	Reasonably good	Poor	Odorless and flavorless	Reasonably good
- Odor And Flavor (On A Continuous Scale):								
• Median Of Defect (Me)	Me=0	0<Me≤2.5	Me>2.5	N/A	N/A	N/A	N/A	N/A
• Median Of The Fruity (Me)	Me>0	Me>0	N/A	N/A	N/A	N/A	N/A	N/A
• Color	Yellow To Green	Yellow To Green	Yellow To Green	Light Yellow	Light, Yellow To Green	Dark Green, Brown, Or Black	Light, Yellow To Brownish Yellow	Light, Yellow To Green
• Aspect At 20°C (68°F) After 24 Hours	Cloudy	Cloudy	N/A	Limpid	Limpid	N/A	Limpid	Limpid
(b) Free Fatty Acid Content, % m/m Expressed As Oleic Acid	≤ 0.8	≤ 2.0	> 2.0	≤ 0.3	≤ 1.0	No limit	≤ 0.3	≤ 1.0
(c) Peroxide Value, In Milleq. Peroxide Oxygen Per kg/oil	≤ 20	≤ 20	No Limit	≤ 5	≤ 15	No limit	≤ 5	≤ 15

* The criteria in (a), (b), and (c) is not required to be concurrent; one is sufficient (for lampante oil only).
** 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.

TABLE I (cont'd)

	US Extra Virgin Olive Oil	US Virgin Olive Oil	Lampante Virgin Olive Oil	US Refined Olive Oil	US Olive Oil	US Crude Olive-Pomace Oil	US Refined Olive-Pomace Oil	US Olive-Pomace Oil
(d) Absorbency In Ultra-Violet (K1% 1cm)								
- 270 nm	≤ 0.22	≤ 0.25	N/A	≤ 1.10	≤ 0.90	N/A	≤ 2.00	≤ 1.70
- Δ K	≤ 0.01	≤ 0.01	N/A	≤ 0.16	≤ 0.15	N/A	≤ 0.20	≤ 0.18
- 232 nm	≤ 2.50	≤ 2.60	N/A	N/A	N/A	N/A	N/A	N/A
(e) Fatty Acid Composition As Determined By Gas Chromatography (% m/m Methyl Esters)	-Arachidic Acid ≤ 0.6 -Behenic Acid ≤ 0.2* -Gadoleic Acid (Eicosenoic) ≤ 0.4 -Heptadecenoic Acid (C17:0) ≤ 0.3 -Heptadecenoic Acid(C17:1) ≤ 0.3 -Lignoceric Acid ≤ 0.2 -Linoleic Acid 3.5 – 21.0					[1] -Linolenic Acid ≤ 1.5 -Myristic Acid ≤ 0.05 -Oleic Acid 55.0 – 83.0 -Palmitoleic Acid 0.3 – 3.5 -Palmitic Acid 7.5 – 20.0 -Stearic Acid 0.5 – 5.0		
(f) Trans Fatty Acid (T) Content (%) C18:1T[2]	≤0.05	≤0.05	≤0.10	≤0.20	≤0.20	≤0.20	≤0.40	≤0.40
(g) Trans Fatty Acid Content (%) C18:2T+C18:3T	≤0.05	≤0.05	≤0.10	≤0.30	≤0.30	≤0.10	≤0.35	≤0.35

* Limit raised to ≤ 0.3 for Olive-Pomace Oils.

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

[1] Linolenic acid values between 1.0-1.5 percent would be subject to further testing listed in Table II.
[2] Fatty acid with 18 Carbon atoms (C) and one *trans* isomer (T).

TABLE II. If Linolenic Acid values are between 1.0 and 1.5 percent, the product must meet the following criteria:

	US Extra Virgin Olive Oil	US Virgin Olive Oil	Lampante Virgin Olive Oil	US Refined Olive Oil	US Olive Oil	US Crude Olive-Pomace Oil	US Refined Olive-Pomace Oil	US Olive-Pomace Oil
(h) Desmethylsterol Composition (% Total Sterol	- Beta-Sitosterol + - Brassicasterol ≤ 0.1** - Campesterol ≤ 4.5 - Cholesterol ≤ 0.5 - Delta – 7 Stigmastenol ≤ 0.5 - Stigmasterol < Campesterol In Edible Oils Clerosterol + Sitostanol + Delta 5-24-Stigmastadienol ≥ 93.0 Delta-5-23-Stigmastadienol+ Delta-5-Avenasterol+							
(i) Total Sterol Content (mg/kg)	≥1000	≥1000	≥1000	≥1000	≥1000	≥2500	≥1800	≥1600
(j) Maximum Difference Between Actual And Theoretical ECN 42 Triglyceride Content	0.2	0.2	0.3	0.3	0.3	0.6	0.5	0.5
(k) Stigmastadiene Content mg/kg	≤0.15	≤0.15	≤0.50	≤ 50	≤ 50	≤0.50	≤120	≤120

** Limit raised to ≤ 0.2 for olive-pomace oils.

TABLE II Continued. If Linolenic Acid values are between 1.0 and 1.5 percent, the product must meet the following criteria:

	US Extra Virgin Olive Oil	US Virgin Olive Oil	Lampante Virgin Olive Oil	US Refined Olive Oil	US Olive Oil	US Crude Olive-Pomace Oil	US Refined Olive-Pomace Oil	US Olive-Pomace Oil
(l) Erythrodiol and uvaol content (% total sterols)	≤4.5	≤4.5	≤4.5 [3]	≤4.5	≤4.5	>4.5 [4]	>4.5	>4.5
(m) Wax content C40+C42+C44+C46 (mg/kg)	≤250	≤250	≤300 [3]	≤350	≤350	>350 [4]	>350	>350
(n) Saturated fatty acid content at the 2-position in the triglycerides: sum of palmitic and stearic acids: % fatty acids in the 2 position	≤1.5	≤1.5	≤1.5	≤1.8	≤1.8	≤2.2	≤2.2	≤2.2
(o) Total alpha-tocopherol mg/kg	0	0	0	≤200	≤200	0	≤200	≤200

3 When the oil has a wax content between 300 mg/kg and 350 mg/kg it is considered lampante virgin olive oil if the total aliphatic alcohol content is ≤ 350 mg/ kg or the erythrodiol + uvaol content is ≤ 3.5%.

4 When the oil has a wax content between 300 mg/kg and 350 mg/kg it is considered crude olive-pomace oil if the total aliphatic alcohol content is > 350 mg/ kg or the erythrodiol + uvaol content is > 3.5%.

TABLE III. Optional requirements.

	US Extra Virgin olive oil	US Virgin olive oil	Lampante virgin olive oil	US Refined olive oil	US Olive oil	US Crude olive-pomace oil	US Refined olive-pomace oil	US Olive-pomace oil
(p) Moisture and volatile matter (% m/m)	≤ 0.2	≤ 0.2	≤ 0.3	≤ 0.1	≤ 0.1	≤ 1.5	≤ 0.1	≤ 0.1
(q) Insoluble impurities in light petroleum % m/m	≤ 0.1	≤ 0.1	≤ 0.2	≤ 0.05	≤ 0.05	N/A	≤ 0.05	≤ 0.05
(r) Flash point	N/A	N/A	N/A	N/A	N/A	≥ 120°C	N/A	N/A
(s) Trace metals mg/kg Iron copper	≤ 3.0 ≤ 0.1	≤ 3.0 ≤ 0.1	≤ 3.0 ≤ 0.1	≤ 3.0 ≤ 0.1	≤ 3.0 ≤ 0.1	N/A	≤ 3.0 ≤ 0.1	≤ 3.0 ≤ 0.1
(t) Unsaponifiable matter g/kg	≤15	≤15	≤15	≤15	≤15	≤30	≤30	≤30
(u) Halogenated Solvents	Maximum content of each halogenated solvent 0.1 mg/kg Maximum content of all halogenated solvents 0.2 mg/kg							

§52.1540 Methods of Analysis

The following methods shall be used to determine the characteristics for olive oil or olive-pomace oil. Alternative methods may be used, provided that they give equivalent results.

(a) Preparation of the test sample

According to International Standards Organization (ISO) 661, “Animal and vegetable fats and oils – Preparation of the test sample”.

(b) Determination of the fatty acid composition

According to ISO 5508, “Analysis by gas chromatography of methyl esters of fatty acids” or American Oil Chemists Society (AOCS) Ch 2-91.

(c) Determination of the trans fatty acid content

According to ISO 15304 or AOCS Ce 1f-96.

(d) Determination of the sterol composition and total sterol content

According to ISO 12228 or AOCS Ch 6-91.

(e) Determination of the content of erythrodiol + uvaol

According to IUPAC no. 2.431, “Determination of the erythrodiol content”. Capillary columns are recommended.

(f) Determination of the wax content

According to AOCS Ch 8-02.

(h) Determination of the difference between the actual and theoretical ECN 42 triglyceride content. According to AOCS 5b-89.

(i) Determination of the stigmastadiene content

According to ISO 15788-1 or AOCS Cd 26-96.

(j) Determination of the fatty acids in the 2-position in the triglycerides

According to ISO 6800, “Determination of the fatty acids in the 2-position in the triglycerides of oils and fats”, or AOCS Ch 3-91.

(k) Determination of the unsaponifiable matter

According to ISO 3596, “Determination of the unsaponifiable matter – Method using diethyl either extraction”, or AOCS Ca 6b-53 or ISO 18609.

The results should be expressed in g/unsaponifiable matter per kg/oil.

(l) Determination of the organoleptic characteristics

According to COI/T.20/Doc. no. 15 "Organoleptic assessment of virgin olive oil".

(m) Determination of the free fatty acidity content

According to ISO 660, “Determination of acid value and acidity”, or AOCS Cd3d-63.

(n) Determination of the peroxide value

According to ISO 3960, “Determination of the peroxide value,” or AOCS Cd8b-90.

(o) Determination of the absorbency in ultra-violet According to ISO 3656 or AOCS Ch 5-91.

(p) Determination of the moisture and volatile matter

According to ISO 662, “Determination of moisture and volatile matter”

(q) Determination of the insoluble impurities in light petroleum

According to ISO 663, “Determination of the insoluble impurities”.

(r) Determination of the flash point

According to the FOSFA International method.

(s) Determination of the trace metals

According to ISO 8294, “Determination of copper, iron and nickel by direct graphite furnace atomic absorption spectrometry”.

(t) Determination of the alpha-tocopherol

According to ISO 9936, “Determination of tocopherols and tocotrienols contents – Method using high-performance liquid chromatography”.

(u) Detection of traces of halogenated solvents
According to COI/T.20/Doc. no. 8 "Determination to tetrachlorethylene in olive oils by gas-liquid chromatography".

(v) Determination of traces of heavy metals.

Determination of lead: according to ISO 12193 or AOCS Ca 18c-91 or AOAC 994.02.

Determination of arsenic: according to AOAC 952.13 or AOAC 942.17 or AOAC 985.16.

§52.1541 Ascertaining the grade of a lot.

(a) The grade of a lot of olive oil or olive-pomace oil covered by these standards is determined by the procedures set forth in the **Regulations Governing Inspection and Certification of Processed Fruits and Vegetables, Processed Products Thereof, and Certain Other Processed Food Products** (7 CFR 52.1 through 52.83). Provided that,

(b) Such sample complies with the applicable standards of quality promulgated under the Federal Food, Drug, and Cosmetic Act;

(c) Such sample complies with the product description;

(d) Such samples meet the indicated grade with respect to quality factors not rated by scorepoints; and

1. None of the samples falls more than one grade below the indicated grade because of any quality factor to which a limiting rule applies;

2. The number of deviants does not exceed the applicable acceptance number indicated in the sampling plans ("deviants" means sample units that fall into the next grade below the indicated grade);

(e) Required analysis on each lot shall include but is not limited to the following:

1. Determination of the organoleptic characteristics;
2. Determination of free fatty acid content (as oleic acid);
3. Determination of peroxide value;
4. Aspect at 20º C after 24 hours;
5. Determination of absorbency in ultra-violet;
6. Determination of the fatty acid composition;
7. Trans fatty acid.

(f) Any additional analysis outlined in Table II and Table III found in §52.1539 of this subpart will be performed at the request of the applicant or when indicated by results.

(g) **Lot inspection.** A lot of olive oil or olive-pomace oil is considered as meeting the requirements for the intended grade if:

1. The requirements of §52.1539 specified in Table I for the intended grade are met.

2. If applicable, the additional requirements of §52.1539 specified in Table II and Table III for the intended grade are met.

3. None of the allowances for the analyses are exceeded for the applicable grade designation.

4. If any of the provisions contained in the above subparagraphs are not met, the grade is determined by considering such provisions in connection with succeedingly lower grades until the grade of the lot, if assignable, is established.

(h) **Single sample unit.** Each unofficial sample unit submitted for quality evaluation will be treated individually and is considered meeting the requirements of the intended grade if:

1. The requirements of §52.1539 (d) specified in Table I are met.

2. If applicable, the additional requirements of §52.1539 specified in Table II and Table III are met.

3. None of the allowances for the individual analyses are exceeded for the applicable grade designation.

(i) **In-plant.** See Lot Inspection.

§52.1542 Score sheet for olive oil and olive-pomace oil.

The following score sheet may be used to summarize the factors determining the various grades:

Size and kind of container ..... …… Container code or markings ..... Label..... Contents (liquid measure).....… Free fatty acid (as oleic) ……. Peroxide value ……..…… Extinction coefficient …… 270 nm ……. 232 nm ……. ΔK …….. Fatty acid composition…… (Meets) (Tentative) (Fails) Trans fatty acid …….. Desmethylsterol …… (Meets) (Fails) Total Sterol …… Theoretical ECN 42 …….. Stigmastadiene …….. Erythrodiol and uvaol……..…… Wax content ……..…… Percent fatty acid in 2 position ……. Total alphatocopherol ……..…… Other analyses ……

Factors	Grade
Flavor and odor.....	**U.S. Grade "Extra Virgin Olive Oil"** **U.S. Grade "Virgin Olive Oil" 1/** **U.S. Grade "Ordinary Virgin Olive Oil" 1/** **U.S. Grade "Olive Oil Not Fit For Human Consumption" 1/** **U.S. Grade "Olive Oil"1/** **U.S. Grade "Refined Olive Oil" 1/** **U.S. Grade "Olive-Pomace Oil" 1/** **U.S. Grade "Refined Olive-Pomace Oil" 1/** **U.S. Grade "Crude Olive-Pomace Oil"1/** **1/ Indicates limiting rule**

Dated: _____

_____
Administrator
Agricultural Marketing Service