Proposed Standard for Olive Oil
Draft Proposal Marketing Order
January 16, 2011

1. Scope

This standard applies to all olive oils that are produced in the USA and subject to the proposed marketing order.
This Standard–

(a) defines grades of olive oils
(b) specifies quality parameters for those grades
(c) will establish requirements for labeling and packing; and
(d) will list acceptable methods of analysis

2. Objective

The purpose of this standard is to not only provide a clear simplified grading system for olive oil that reflects the realities of current olive oil trade in the USA but also inform, protect, and allow consumers to make informed buying decisions based on measurable differences in quality.

3. Referenced documents

To be added

4. Definitions

For the purpose of this Standard, the definitions below apply.

4.1 Absorbency in ultraviolet

Absorbance (K) of a 1% (m/v) solution of the oil in the specified solvent, measured at the specified wavelengths. The absorbency (K232) at 232nm is caused by primary oxidation products and conjugated dienes; the absorbency (K268 or K270, depending on the specified solvent) at 268 or 270 nm, is caused by secondary oxidation products and conjugated trienes. Delta K is calculated from the absorbency measured at 270, 266, and 274nm.

4.2 Best-before date

Date that signifies the end of the period during which the intact package of oil, if stored in accordance with stated storage conditions, will remain fully marketable and will retain any specific qualities for which express or implied claims have been made

4.3 Diacylglycerol (DAG)

A diacylglycerol (DAG) is an acylglycerol consisting of two fatty acid chains covalently bonded to a glycerol molecule through ester linkages. In virgin olive oils, DAGs are present in a range of 1 to 3% and they are found as 1,2- and 1,3- isomers. Fresh extra virgin olive oil contains a high proportion of 1,2-isomers to 1,2- and 1,3-isomers.

4.4 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.

4.5 Free fatty acid content/free acidity

Free fatty acids are formed by the hydrolysis of the triacylglycerols in oils. The content of free fatty acids in grams per 100 grams expressed as percent of free oleic acid.

4.6 Median of defects

4.6.1 General

A calculation of the median score of a panel of tasters who characterize the olive oil's negative flavor and odor attributes. Negative attributes are any flavor or odor that derives from enzymatic degradation, fermentation, or microbial spoilage of olives prior to processing, fermentation of olive matter following extraction, subsequent excessive oxidation, or any other character that could not be reasonably assigned to the natural flavors derived from the olive. These include, but are not limited to the defects known as fusty, muddy-sediment, musty, rancid and winey-vinegary.

4.6.2 Median of defects—Fusty

A flavor defect attributable to poor storage conditions of the olives, usually promoting the bacterial growth of the *Clostridium* and *Pseudomonas* genera.

4.6.3 Median of defects—Muddy sediment

A flavor defect caused by storage in contact with oil sediment for long periods.

4.6.4 Median of defects—Musty

A flavor defect occurring when low temperatures and high humidity promote mould growth, mainly of the *Aspergillus* and *Penicilium* genera.

4.6.5 Median of defects—Rancid

A flavor defect caused by the oxidation of the oil and subsequent formation of aldehydes during the production process giving the oil an oxidized flavor and odor.

4.6.6 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.

4.7 Median of fruity

A calculation of the median score from a panel of tasters who assess the intensity of the positive fruity characteristics of the olive oils.

4.8 Odor or aroma

An odor or aroma is a volatilized chemical compound, generally at a very low concentration, that is perceived by olfaction.

4.9 Operator

Person or company that runs or is involved in one or more parts of the olive oil trading business.

4.10 Organoleptic analysis

Evaluation based on flavor and odor characteristics.

4.11 Pyropheophytin a

Degradation product of chlorophyll a that results from thermal or age related degradation of the product.

4.12 Oxidative stability index

An indicator of the stability and the shelf life properties of oils. The determination entails speeding up the oxidation process in the oil under heat and air current and monitoring volatile substances associated with rancidity.

4.13 Trans fatty acid

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.

5. Product description

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

6. Grades of olive oil

(a) Extra virgin olive oil
(b) Olive oil
(c) Olive oil not fit for human consumption without further processing

7. Quality Parameters For grades of olive oil (Table 1)

Quality Parameter		Extra virgin olive oil	Olive oil	Olive oil not fit for consumption without further processing
Free fatty acid (FFA) (% as oleic acid)		≤0.5	≤2.0	>2.0
Absorbency in ultraviolet	K_{232} ($K^{\%}_{1cm}$)	≤2.30	≤2.60	>2.60
	K_{270} ($K^{\%}_{1cm}$)	≤0.20	≤0.25	>0.25
	Delta K ($K^{\%}_{1cm}$)	≤/0.01/	≤/0.01/	>/0.01/
Moisture and volatile matter (MOI) (% m/m)		≤0.2	≤0.2	≤0.3
Insoluble impurities (INI) (% m/m)		≤0.1	≤0.1	≤0.2
Pyropheophytin *a* (PPP) (Area %)		≤15	N/A	N/A
1,2-Diacylglycerols (DAGs) (Area %)		≥40	N/A	N/A
Organoleptic analysis	Median of defects (MeD)	= 0.0	0.0 < MeD ≤2.5	>2.5
	Median of fruitiness (MeF)	>0.0	N/A	N/A

8. Food additives

8.1 Extra virgin olive oil

Extra virgin olive oils shall not contain food additives.

8.2 Olive oil

Tocopherols may be added to olive oil, to restore natural tocopherols lost in the refining process up to a maximum level of 200 mg/kg of total alpha-tocopherol in the final product.

8.3 Processing aids

Processing aids are allowed during the oil extraction process to the extent allowed by the _____

9. Contaminants

9.1 Heavy metals

The products covered by this Standard shall comply with maximum limits established by the _____.

9.2 Copper and Iron

Specific limits for copper (Cu) and iron (Fe) in extra virgin olive oils and olive oil are Cu ≤0.1 mg/kg and Fe ≤3.0 mg/kg.

9.3 Pesticide residues

The products covered by this Standard shall comply with the maximum pesticide residue limits established by the _____

9.4 Polycyclic aromatic hydrocarbons (PAHs)

With regard to polycyclic aromatic hydrocarbons (PAHs), also known as poly-aromatic hydrocarbons, the products covered by this Standard shall comply with maximum limits established by the _____.

10. Hygiene

Products covered by this Standard that are intended for human consumption shall be prepared and handled in accordance with_____ It is recommended that products covered by the provisions of this Standard are prepared and handled in accordance with the *Codex Recommended International Code of Practice—General Principles of Food Hygiene* (CAC/RP 1), and its Annex on Hazard Analysis and Critical Control Point (HACCP) System and Guidelines for its Application.

11. Packaging

11.1 General

Extra virgin olive oils and olive oils intended for trade shall be packed in containers complying with the *General Principles of Food Hygiene* recommended by the Codex Alimentarius Commission (CAC/RCP 1), and other relevant texts such as codes of hygienic practice and codes of practice.

When packaging edible extra virgin olive oils and olive oils operators shall—

(a) only use packaging material that is fit for its intended use in order to minimize deterioration of quality and to ensure that the product grade and associated characteristics continue to meet the requirements of this Standard for the duration of the product's stated shelf life;

(b) only use material that is not likely to cause oil contamination;

(c) ensure that there is no likelihood that the oils may become contaminated during the packaging process.

11.2 Labeling

11.2.1 General

Operators are advised that labelling requirements, in addition to those set out in this Standard, may be specified in laws, regulations and standards.

In addition to sections 2, 3, 7 and 8 of the *Codex General Standard for the Labelling of Pre-packaged Foods* (Codex STAN 1) and the standards applying to food intended for direct sale to consumers in the_____--

11.2.2 Name of the product

11.2.2.1 General

The labelling on each container shall indicate the grade (of the product as specified and determined by this Standard. Operators shall ensure that the designation and an additional description of the product complies with the_____-

Indications shown on the labelling shall not mislead the purchaser, particularly as to the characteristics of the oil concerned, or by attributing to it properties which it does not possess, or by suggesting that it possesses special characteristics where those characteristics are common to most oils.

11.2.2.2 Grades of olive oils

The following are the permitted designations for labelling:

(a) Extra virgin olive oil

(b) Olive oil

(c) Olive Oil not fit for human consumption without further processing

The designations shall be prominent and clearly legible in full in the principal display panel of the label.

Any other designations (e.g. Pure Olive Oil, Light or Lite Olive Oil, Extra Light or Lite Olive Oil) shall not be used.

No adjective of any kind (e.g. Premium, Super, Light, Lite, Pure) shall be used together with the approved designation of oils by presenting them on the same line as, or having equal or greater prominence than, the designation.

Words describing country or region of origin (e.g. California, Tuscan, Spanish, etc.); oil character (e.g. mellow, fruity, robust, etc.); and/or processing method (e.g. cold pressed, first extraction, etc.) shall only be used where the information can be substantiated and does not mislead consumers.

11.2.2 Name and address

The name and address of the manufacturer, packer, distributor, importer, exporter or seller shall be declared in accordance with the _____-

11.2.3 Country of origin

The use of the country or countries of origin on the label shall comply with_____

11.2.4 Lot identification

Each container shall be embossed or otherwise permanently marked in code or in clear writing to identify the producing factory and the lot in accordance with the _____

11.2.5 Best-before date

11.2.5.1 General

The best-before date shall be declared on the principal label of the product in accordance with the_____

Extra virgin olive oils and olive oils shall not display a best-before date greater than two years from the date of packaging. Harvest date may also be included on the principal label.

11.2.5.2 Determination of best-before date

The best-before date shall be supported by technical evidence. Methods used to determine oil durability may include:

(a) Oil oxidative stability index in accordance with Clause 12.11.

(b) Fatty acid profile and antioxidant content.

11.2.6 Optional indications

11.2.6.1 General

Optional indications listed in Clauses 11.2.6.2, 11.2.6.3 and 12.2.6.4 may appear on the label of olive oils.

11.2.6.2 Organic

The words 'organic' shall only be used to describe the oil where the oil complies with the requirements of_____

11.2.6.3 First cold pressing

The indication 'first cold pressing', 'cold pressing', or similar, may appear only for extra virgin olive oils obtained from a first mechanical pressing of the olive paste by using a mechanical, hydraulic or centrifugal press at a temperature that does not lead to significant thermal alterations.

11.2.6.4 Cold extraction

The indication 'cold extraction' or 'cold crushed', or similar, may appear only for extra virgin olive oils obtained by any mechanical or other physical means at a temperature that does not lead to significant thermal alterations.

11.2.6.5 Storage instructions

The label shall include specific storage conditions (e.g. dark conditions and cool temperatures) necessary to ensure the validity of the best-before date declared on the label. The statement of those conditions shall be of equal or greater prominence as the best-before date.

12. Methods of analysis

12.1 General

The methods set out in this Clause (8), or alternative methods providing equivalent results, shall be used to determine the characteristics extra virgin olive oils, olive oils or olive oils not fit for consumption without further processing. At all times, the most recently published version of the stated methods shall be used.

12.2 Preparation of the test sample

Test samples shall be prepared in accordance with ISO 661, Animal and vegetable fats and oils.

12.3 Determination of the trans fatty acid content

Trans fatty acid content shall be determined in accordance with ISO 15304 or AOCS Ch 2a-94 (Rev. 2002) or IOC/T.20/Doc. 17.Rev.1.

12.4 Determination of organoleptic characteristics

Organoleptic characteristics shall be determined in accordance with COI/T.20/Doc. 15. Rev.2. or AOCS _____

12.5 Determination of free fatty acid content

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

12.6 Determination of absorbency in ultraviolet

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

12.7 Determination of moisture and volatile matter

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

12.8 Determination of insoluble impurities in light petroleum

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

12.9 Determination of trace metals

Determination of copper and iron by direct graphite furnace atomic absorption spectrometry shall be in accordance with ISO 8294.

12.10 Determination of traces of heavy metals

12.10.1 Determination of traces of heavy metals—Lead

Traces of lead shall be determined in accordance with ISO 12193 or AOCS Ca 18c-91 or AOAC 994.02.

12.10.2 Determination of traces of heavy metals—Arsenic

Traces of arsenic shall be determined in accordance with AOAC 952.13 or AOAC 942.17 or AOAC 985.16.

12.11 Determination of oxidative stability index

Oxidative stability index shall be determined in accordance with AOCS Cd 12b-92.

12.12 Determination of pyropheophytins

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

12.13 Determination of 1,2-Diacylglycerol content

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