§52.1539 Ascertaining the grade.

The U.S. grades of olive oil or olive-pomace oil must meet the following minimum requirements, of the respective grades listed in Table I, as appropriate.

TABLE I

Quality Criteria	US Extra Virgin Olive Oil	US Virgin Olive Oil	Lampante Virgin Olive Oil[1/]	US Refined Olive Oil	US Olive Oil	US Olive-pomace Oil	US Refined Olive-pomace Oil	US Crude Olive-pomace Oil
(a) Organoleptic Characteristics								
- Odor And Flavor	Excellent	Good	Poor	Acceptable	Good	Good	Acceptable	N/A
- Odor And Flavor (On A Continuous Scale):								
• Median Of Defect (M_d)	$M_d = 0$	$0 < M_d \leq 2.5$	$M_d > 2.5$[2/]	N/A	N/A	N/A	N/A	N/A
• Median Of The Fruity (M_f)	$M_f > 0$	$M_f > 0$	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	Light Yellow To Green	Light Yellow To Brownish Yellow	Dark Green, Brown, Or Black
(b) Free Fatty Acid Content, % m/m Expressed As Oleic Acid	≤ 0.8	≤ 2.0	> 2.0	≤ 0.3	≤ 1.0	≤ 1.0	≤ 0.3	No limit
(c) Peroxide Value, In Milleq. Peroxide Oxygen Per kg/oil	≤ 20	≤ 20	No Limit	≤ 5	≤ 15	≤ 15	≤ 5	No limit

1/ The criteria in (a), (b), and (c) is not required to be concurrent; one is sufficient (for lampante oil only).
2/ Or when the median of the defect attribute is less than or equal to 2.5 and the median of the fruity attribute is equal to 0.

TABLE I continued

	US Extra Virgin Olive Oil	US Virgin Olive Oil	Lampante Virgin Olive Oil	US Refined Olive Oil	US Olive Oil	US Olive-pomace Oil	US Refined Olive-pomace Oil	US Crude Olive-pomace Oil
Quality Criteria								
(d) Absorbency In Ultraviolet (UV) (K1% 1cm)								
- 270 nm	≤ 0.22	≤ 0.25	N/A	≤ 1.10	≤ 0.90	≤ 1.70	≤ 2.00	N/A
- Δ K	≤ 0.01	≤ 0.01	N/A	≤ 0.16	≤ 0.15	≤ 0.18	≤ 0.20	N/A
- 232 nm	≤ 2.50 6/	≤ 2.60 6/	N/A	N/A	N/A	N/A	N/A	N/A
Purity Criteria								
(e) Fatty Acid Composition As Determined By Gas Chromatography (% m/m Methyl Esters)	-Arachidic Acid (C20:0) ≤ 0.6 -Behenic Acid (C22:0)≤ 0.2 3/ -Gadoleic Acid (Eicosenoic) (C20:1) ≤ 0.4 -Heptadecanoic Acid (C17:0) ≤ 0.3 -Heptadecenoic Acid(C17:1) ≤ 0.3 -Lignoceric Acid (C24:0) ≤ 0.2 -Linoleic Acid (C18:2) 3.5 – 21.0					-Linolenic Acid (C18:3) ≤ 1.5 4/ -Myristic Acid (C14:0) ≤ 0.05 -Oleic Acid (C18:1) 55.0 – 83.0 -Palmitoleic Acid (C16:1) 0.3 – 3.5 -Palmitic Acid (C16:0) 7.5 – 20.0 -Stearic Acid (C18:0) 0.5 – 5.0		
(f) Trans Fatty Acid (T) Content (%) C18:1T 5/	≤ 0.05	≤ 0.05	≤ 0.10	≤ 0.20	≤ 0.20	≤ 0.40	≤ 0.40	≤ 0.20
(g) Trans Fatty Acid Content (%) C18:2T+C18:3T	≤ 0.05	≤ 0.05	≤ 0.10	≤ 0.30	≤ 0.30	≤ 0.35	≤ 0.35	≤ 0.10

3/ Limit raised to ≤ 0.3 for olive-pomace oils.

4/ Linolenic acid values between 1.0 and 1.5 percent would be subject to further testing listed in Table II.

5/ Fatty acid with 18 Carbon atoms (C) and one *trans* isomer (T)

6/ Commercial partners in the country of retail sale may require compliance.

TABLE I continued.

Purity Criteria	US Extra Virgin Olive Oil	US Virgin Olive Oil	Lampante Virgin Olive Oil	US Refined Olive Oil	US Olive Oil	US Olive-pomace Oil	US Refined Olive-pomace Oil	US Crude Olive-pomace Oil
(h) Desmethylsterol Composition (% Total Sterol)		- Brassicasterol ≤ 0.1[7/] - Campesterol ≤ 4.5 [8/] - Cholesterol ≤ 0.5 - Delta – 7 Stigmastenol ≤ 0.5 - Stigmasterol < Campesterol In Edible Oils Clerosterol + Sitostanol + Beta-Sitosterol + Delta 5-24-Stigmastadienol + Delta-5-23-Stigmastadienol+ Delta-5-Avenasterol ≥ 93.0						
(i) Total Sterol Content (mg/kg)	≥1000	≥1000	≥1000	≥1000	≥1000	≥1600	≥1800	≥2500
(j) Stigmastadiene Content (mg/kg)	≤0.15	≤0.15	≤0.50	N/A	N/A	N/A	N/A	N/A

[7/] Limit raised to ≤ 0.2 for olive-pomace oils.

[8/] Campesterol values between 4.0 and 4.5 would be subject to further testing listed in Table II.

TABLE II. Confirmatory tests for products with linolenic acid values between 1.0 and 1.5 percent, and/or campesterol values between 4.0 and 4.5 percent.

Purity Criteria	US Extra Virgin Olive Oil	US Virgin Olive Oil	Lampante Virgin Olive Oil	US Refined Olive Oil	US Olive Oil	US Olive-pomace Oil	US Refined Olive-pomace Oil	US Crude Olive-pomace Oil
(k) Maximum Difference Between Actual And Theoretical ECN 42 Triacylglycerol Content	|≤0.2|	|≤0.2|	|≤0.3|	|≤0.3|	|≤0.3|	|≤0.5|	|≤0.5|	|≤0.6|
(l) Erythrodiol and uvaol content (% total sterols)	≤4.5	≤4.5	≤4.5 9/	≤4.5	≤4.5	>4.5	>4.5	>4.5 10/
(m) Wax content C40+C42+C44+C46 (mg/kg)	≤250	≤250	≤300 9/	≤350	≤350	>350	>350	>350 10/
(n) Content of 2-glyceryl monopalmitate (2P) C16:0 ≤ 14% C16:0 > 14%	2P≤ 0.9% 2P≤ 1.0%	2P≤ 0.9% 2P≤ 1.0%	2P≤ 0.9% 2P≤ 1.1%	N/A	N/A	≤1.2%	≤1.4%	≤1.4%

9/ When the oil has a wax content between 300mg/kg and 350 mg/kg it is considered lampante virgin olive oil if the total aliphatic alcohol content is less than or equal to 350 mg/kg or the erythrodiol + uvaol content is less than or equal to 3.5 percent.

10/ 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 less than or greater than 350 mg/kg or the erythrodiol +uvaol content is less than or greater than 3.5 percent.

TABLE III. Optional requirements.

Quality Criteria	US Extra Virgin Olive Oil	US Virgin Olive Oil	Lampante Virgin Olive Oil	US Refined Olive Oil	US Olive Oil	US Olive-pomace Oil	US Refined Olive-pomace Oil	US Crude Olive-pomace Oil
(o) Moisture and volatile matter (% m/m)	≤ 0.2	≤ 0.2	N/A	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 1.5
(p) Insoluble impurities in light petroleum (% m/m)	≤ 0.1	≤ 0.1	N/A	≤ 0.05	≤ 0.05	≤ 0.05	≤ 0.05	N/A
(q) Flash point	N/A	N/A	N/A	N/A	N/A	N/A	N/A	≥ 120°C
(r) 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	≤ 3.0 ≤ 0.1	≤ 3.0 ≤ 0.1	N/A
(s) Unsaponifiable matter (g/kg)	≤15	≤15	≤15	≤15	≤15	≤30	≤30	≤30
(t) Aspect At 20°C (68°F) After 24 Hours	N/A	N/A	N/A	Limpid	Limpid	Limpid	Limpid	N/A
(u) Halogenated Solvents	Maximum content of each halogenated solvent 0.1 mg/kg Maximum content of all halogenated solvents 0.2 mg/kg							
(v) Heavy Metals Lead (Pb) Arsenic (As)	Maximum permissible content is 0.1 mg/kg							
(w) Pesticide Residues	The products covered by this standard shall comply with the maximum residue limits established by the U. S. Environmental Protection Agency.							