DRAFT KENYA STANDARD

DKS 1789:2022

ICS ##.###

Third Edition

Olive oil — Specification

Kenya Bureau of Standards

Standards for Quality life

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REVISION OF KENYA STANDARDS

In order to keep abreast of progress in industry, Kenya Standards shall be regularly reviewed. Suggestions for improvements to published standards, addressed to the Managing Director, Kenya Bureau of Standards, are welcome.

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Olive oil — Specification

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Foreword

This Standard was prepared by the Food Labelling Technical under the guidance of the Standards Projects Committee, and it is in accordance with the procedures of the Kenya Bureau of Standards.

Olive oil being a high value product is prone to adulteration and misrepresentation. The third edition of this standard was revised to align the requirements to international standards and introduce specific identifying characteristics of olive oil to be able to identify with certainty an olive product. Further, the revision also introduced safety parameters such as Polycyclic Aromatic Hydrocarbons based on emerging technical information on these products. The edition will assure consumers of a safe and genuine products in addition to ensuring fair trade practices on the products.

This third edition cancels and replaces second edition of KS 1789:2003 which has been technically revised.

During the preparation of this standard, reference was made to the following documents:

Codex Standard, CXS 33 – 1981, amended 2013 - Standard for olive oils and olive pomace oils.

Regulation (EC) No 466/2001.

KS EAS 38, Labelling of prepackaged foods – General Requirements.

Acknowledgement is hereby made for the assistance derived from these sources.

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Olive oils — Specification

1 Scope

This Draft Kenya Standard specifies the requirements, sampling and test methods for virgin olive oil, refined olive oil, olive-pomace oil produced from the fruit of the olive tree (*Olea europeae* L.) intended for human consumption.

The standard does not apply where olive oil has been used as blend with other edible oil seeds.

2 Normative references

The following referenced documents referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

AOCS Ch 8-02, *Determination of Wax Content by Capillary Column Gas-Liquid. Chromatography*

COI/T.20/Doc. Nº 8, *Determination of tetrachloroethylene in olive oils by gas-liquid chromatography*

KS ISO 3596, *Animal and vegetable fats and oils — Determination of unsaponifiable matter — Method using diethyl ether extraction*

KS ISO 3960, *Animal and vegetable fats and oils-Determination of peroxide value -lodometric (visual) endpoint determination*

KS ISO 3961, *Animal and vegetable fats and oils — Determination of iodine value*

KS ISO 662, *Animal and Vegetable fats and oils — Determination of moisture and volatile matter content*

KS ISO 663, *Animal and vegetable fats and oils-Determination of insoluble impurities content*

KS ISO 3657, *Animal and vegetable fats and oils — Determination of saponification value*

KS ISO 6320, *Animal and vegetable fats and oils — Determination of refractive index*

KS ISO 6883, *Animal and vegetable fats and oils — Determination of conventional mass per volume (litre weight in air).*

KS ISO 8294, *Animal and vegetable fats and oils — Determination of copper, iron and nickel contents- graphite furnace atomic absorption method*

KS ISO 12193, *Animal and vegetable fats and oils — Determination of lead by direct graphite furnace atomic absorption spectroscopy*

KS ISO 12228, *Animal and vegetable fats and oils — Determination of individual and total sterols contents — Gas chromatographic method*

KS ISO 15304, *Animal and vegetable fats and oils — Determination of the content of trans fatty acid isomers of vegetable fats and oils — Gas chromatographic method*

ISO 3656, *Animal and vegetable fats and oils — Determination of ultraviolet absorbance expressed as specific uv extinction*

ISO 6800, *Animal and vegetable fats and oils — Determination of the composition of fatty acids in the 2-position of the triglyceride molecules*

ISO 15788-2, *Animal and vegetable fats and oils — determination of stigmastadienes in vegetable oils — Part 2: Method using high-performance liquid chromatography (hplc)*

ISO 15753:2016, *Animal and vegetable fats and oils — Determination of polycyclic aromatic hydrocarbons*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
olive oil
oil obtained solely from the fruit of the olive tree (*Olea europaea* L.), to the exclusion of oils obtained using solvents or re-esterification processes and of any mixture with oils of other kinds.

3.2
virgin Olive oil
oils obtained from the fruit of the olive tree solely by mechanical or other physical means under conditions, particularly thermal conditions, that do not lead to alterations in the oil, and which have not undergone any treatment other than washing, decanting, centrifuging and filtration.

3.3
olive pomace oil
oil obtained by treating olive pomace with solvents other than halogenated solvents or by other physical treatments, to the exclusion of oils obtained by re-esterification processes and of any mixture with oils of other kinds

3.4
saturated fatty acids at position 2
sum of the palmitic (16.0) and stearic (18:0) acids expressed as a percentage (m/m) of the total fatty acids at position 2

3.5
heavy polycyclic aromatic hydrocarbon
includes Benzo(a) pyrene, Benzo (b) fluoranthene; Benzo (k) fluoranthene, DiBenzo (a) anthracene and Benzo (g.h.i) perylene.

4 Requirements

4.1 General requirements

Olive oils shall

a) be free from adulterants, and any other foreign matter, separated water and added colouring substances;

b) have colour characteristic of the designated product;

4.2 Classification of olive oils

4.2.1 Olive oils shall be classified as follows:

4.2.1.1 Virgin oils may be classified as

a) extra virgin oil;

b) virgin olive oil; or

c) ordinary virgin oil.

4.2.1.2 Refined olive oil: olive oil obtained from virgin olive oils by refining methods which do not lead to alterations.

4.2.1.3 Olive oil: oil consisting of a blend of refined olive oil and virgin olive oils suitable for human consumption.

4.2.1.4 Refined olive-pomace oil: oil obtained from crude olive-pomace oil by refining methods which do not lead to alterations in the initial glyceridic structure.

4.2.1.5 Olive-pomace oil: oil consisting of a blend of refined olive-pomace oil and virgin olive oils in the initial glyceridic structure.

4.3 Specific requirements

4.3.1 Specific identification characteristics

4.3.1.1 Compositional characteristics

Olive oils shall comply with compositional characteristics given in Table 2 when tested in accordance with the test methods specified therein.

Table 2 — Compositional characteristics for olive oil

S/N	Parameter	Extra virgin olive oil	Virgin olive oil	Ordinary virgin olive oil	Refined olive oil	Olive oil	Refined olive-pomace oil	Olive pomace oil	Test method
i.	Fatty acid, oleic acid, g/100 g, max.	0.8	2.0	3.3	0.3	1	0.3	1	KS ISO 15304
ii.	Total sterols, mg/kg, max.	1,000	1,000	1,000	1,000	1,800	1,800	1,800	KS ISO 12228
iii.	Cholesterol, % m/m, max.	0.5	0.5	0.5	0.5	0.5	0.5	0.5	KS ISO 12228
iv.	Brassicasterol, % m/m, max.	0.1	0.1	0.1	0.1	0.1	0.1	0.2	KS ISO 12228
v.	Campesterol, % m/m, max.	4.0	4.0	4.0	4.0	4.0	4.0	4.0	KS ISO 12228
vi.	Stigmasterol, % m/m, max.	Less than that of campesterol	Less than that of campesterol	Less than that of campesterol	Less than that of campesterol	Less than that of campesterol	Less than that of campesterol	Less than that of campesterol	KS ISO 15788 – 1, 2
vii.	Delta-7-stigmastenol, % m/m, max.	0.5	0.5	0.5	0.5	0.5	0.5	0.5	KS ISO 15788 – 1, 2
viii.	Wax content, mg/kg, max.	250	250	250	350	350	350	350	AOCS Ch. 8 – 02 (02)
ix.	Difference between the actual and theoretical ECN 42 triglyceride content	0.2	0.2	0.2	0.3	0.3	0.5	0.5	AOCS Ce 5b – 89 (97)
x.	Peroxide Value, milliequivalents of	20	20	20	5	15	5	15	KS ISO 3960

	active oxygen/kg oil, max.								

4.2.1.2 Absorbency characteristics

Olive oil shall comply with absorbency in ultra-violet K270 given in Table 3 when tested in accordance with the test methods specified therein.

Table 3 — Absorbency in Ultra-Violet K270

S/N	Product	Absorbency in ultra-violet K270	Delta K	Test method
i.	Extra virgin olive oil	≤ 0.22	≤ 0.01	KS ISO 3656
ii.	Virgin olive oil	≤ 0.25	≤ 0.01	
iii.	Ordinary virgin olive oil	≤ 0.30[a]	≤ 0.01	
iv.	Refined olive oil	≤ 1.10	≤ 0.16	
v.	Olive oil	≤ 0.90	≤ 0.15	
vi.	Refined olive-pomace oil	≤ 2.00	≤ 0.20	
vii.	Olive pomace oil	≤ 1.70	≤ 0.18	
[a] After passage of the sample through activated alumina, absorbency at 270 nm shall be equal to or less than 0.11.				

4.3.2 Specific quality requirements

Olive oils shall comply with the specific quality requirements given in Table 3 when tested in accordance with the test methods specified therein.

Table 4 — Specific quality requirements for olive oil

S/N	Parameter	Extra virgin olive oil	Virgin olive oil	Ordinary virgin olive oil	Refined olive oil	Olive oil	Refined olive-pomace oil	Olive pomace oil	Test method
i.	Moisture and volatile matter, %, m/m, max.	0.2	0.1	0.1	0.1	0.1	0.1	0.1	KS ISO 662
ii.	Insoluble impurities, %, m/m	0.1	0.05	0.05	0.05	0.05	0.05	0.05	KS ISO 663
iii.	Relative density, 20°C/water at 20°C	0.910 - 0.916	0.910 - 0.916	0.910 - 0.916	0.910 - 0.916	0.910 - 0.916	0.910 - 0.916	0.910 - 0.916	KS ISO 6883
iv.	Refractive index (n 20 D)	1.4677 - 1.4705	1.4677 - 1.4705	1.4677 - 1.4705	1.4677 - 1.4705	1.4680 - 1.4707	1.4680 - 1.4707	1.4680 - 1.4707	KS ISO 6320
v.	Saponification value, mg KOH/g oil	184 - 196	184 - 196	184 - 196	184 - 196	182 - 193	182-193	182 - 193	KS ISO 3657
vi.	Iodine value (Wijs)	75 - 94	75 - 94	75 - 94	75 - 94	75 - 92	75 - 92	75 - 92	KS ISO 3961
vii.	Unsaponifiable matter, g/kg, max.	15	15	15	15	30	30	30	KS ISO 3596
viii.	Peroxide Value, milliequivalents of	20	20	20	5	15	5	15	KS ISO 3960

	active oxygen/kg oil, max.								
ix.	Saturated fatty acids at the 2-position in the triglyceride, %, max.	1.5	1.5	1.5	1.8	1.8	2.2	2.2	KS ISO 6800

5 Fortification

Olive oil shall be fortified in accordance to KS EAS 769. Exemption shall be on virgin oils.

6 Food additives

6.1 No food additives are permitted in virgin oils.

6.2 Only approved food additives in KS CXS 192 may be used in amounts specified therein.

7 Contaminants

7.1 Olive oil shall comply with those maximum limits specified in Table 5 when tested in accordance with the test methods specified therein.

Table 5 — Limits for contaminants in edible palm oil

S/N	Contaminant	Maximum level	Test method
i.	Iron, mg/kg, max.	3	KS ISO 8294
ii.	Copper, mg/kg, max.	0.1	
iii.	Lead, mg/kg	0.08	KS ISO 12193
iv.	Arsenic, mg/kg	0.1	KS ISO 2590

7.2 Olive oil shall also comply with KS CXS 193.

7.3 Other contaminants

Olive oil shall comply with the requirements for other contaminants specified in Table 6 when tested in accordance with the test methods specified therein.

Table 6 — Limits for solvents and polycyclic aromatic hydrocarbons

S/N	Contaminant	Maximum limit	Test method
i.	Halogenated Solvents, mg/kg: each halogenated solvent sum of all halogenated solvents	 0.1 0.2	COI/T.20/Doc. No.8
ii.	Total Heavy Polycyclic Aromatic Hydrocarbon, µg/kg, max	5[a]	KS ISO 15 753
[a] Individual PAH shall not exceed 2 µg/kg.			

8 Hygiene

Olive oil shall be produced in compliance with KS EAS 39.

9 Packaging

Olive oil shall be packaged in food grade containers and sealed in manner to ensure the safety and quality requirements specified in this standard are maintained throughout the shelf life of the product.

10 Labelling

10.1 The container shall be labelled in accordance with KS EAS 38.

10.2 The name of the product shall either be: ‘Extra Virgin Oil’; or ‘Virgin Oil’; or ‘Ordinary Virgin Oil’; or Refined Olive oil’; or ‘Olive Oil’; or ‘Refined Olive-pomace oil’; or ‘Olive-pomace oil’.

11 Sampling

Sampling shall be done in accordance with KS ISO 5555 and samples shall be prepared for testing in accordance with ISO 661.

Annex A
(informative)

Fatty acid composition

Fatty acid composition as determined by gas chromatography (% total fatty acids)

Fatty acid	Virgin olive oils	Olive oil and Refined olive oil	Olive-pomace oil and Refined olive-pomace oil
C14:0	0.0 – 0.05	0.0 – 0.05	0.0 – 0.05
C16:0	7.5 – 20.0	7.5 – 20.0	7.5 – 20.0
C16:1	0.3 – 3.5	0.3 – 3.5	0.3 – 3.5
C17:0	0.0 – 0.3	0.0 – 0.3	0.0 – 0.3
C17:1	0.0 – 0.3	0.0 – 0.3	0.0 – 0.3
C18:0	0.5 – 5.0	0.5 – 5.0	0.5 – 5.0
C18:1	55.0 – 83.0	55.0 – 83.0	55.0 – 83.0
C18:2	3.5 – 21.0	3.5 – 21.0	3.5 – 21.0
C20:0	0.0 – 0.6	0.0 – 0.6	0.0 – 0.6
C20:1	0.0 – 0.4	0.0 – 0.4	0.0 – 0.4
C22:0	0.0 – 0.2	0.0 – 0.2	0.0 – 0.3
C24:0	0.0 – 0.2	0.0 – 0.2	0.0 – 0.2
C18:1 T	0.0 – 0.05	0.0 – 0.20	0.0 – 0.40
C18:2 T + C18:3 T	0.0 – 0.05	0.0 – 0.30	0.0 – 0.35

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