

DRAFT KENYA STANDARD

**DKS 3026:
2024**

ICS 67.200.10

First Edition

Crude avocado oil — Specification

PUBLIC REVIEW DRAFT

TECHNICAL COMMITTEE REPRESENTATION

The following organizations were represented on the Technical Committee:

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Bidco Africa Limited
Crofts Limited
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Foreword

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

Kenya Bureau of Standards (KEBS) has established Technical Committees (TCs) mandated to develop Kenya Standards (KS). The Committees are composed of representatives from the public and private sector organizations in Kenya.

Kenya Standards are developed through Technical Committees that are representative of key stakeholders including government, academia, consumer groups, private sector and other interested parties. Draft Kenya Standards are circulated to stakeholders through the KEBS website and notifications to World Trade Organization (WTO). The comments received are discussed and incorporated before finalization of the standards, in accordance with the Procedures for Development of Kenya Standards.

Kenya Standards are subject to review, to keep pace with technological advances. Users of the Kenya Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

This standard was developed to guide the industry in addressing issues of quality and safety of the crude avocado oil in particular during its cross-border trade.

It is to be noted that the crude and products are considered as raw materials and should not be sold for direct human consumption, but they are instead meant for further processing.

During the preparation of this standard, reference was made to the following document (s):

CXS 19, Standard for edible fats and oils not covered by individual standards.

CXS 210, Standard for Named Vegetable Oils

Avocado oil-HortResearch, the horticulture and food research institute, oils and fat group.

Acknowledgement is hereby made for the assistance derived from this (these) source (s).

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Crude avocado oil — Specification

1 Scope

This Draft Kenya Standard specifies requirements, sampling and test methods for crude avocado oil derived from the fruit of the avocado (*Persea americana*) intended for further processing.

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.

AOAC 952.13, *Arsenic in food. Silver diethyldithiocarbamate*

KS CXC 36, *Code of Practice for the Storage and Transport of Edible Fats and Oils in Bulk*

KS CXS 192, *General Standard for Food Additives*

KS EAS 38, *Labelling of prepackaged foods — Specification*

KS EAS 39, *Hygiene in the food and drink manufacturing industry — Code of practice*

KS EAS 803, *Nutrition labelling — Requirements*

KS EAS 804, *Claims — General requirements*

KS EAS 805, *Use of nutrition and health claims — Requirements*

KS ISO 660, *Animal and vegetable fats and oils — Determination of acid value and acidity*

KS ISO 661, *Animal and vegetable fats and oils — Preparation of test sample*

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

KS ISO 5555, *Animal and vegetable fats and oils — Sampling*

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 10539, *Animal and vegetable fats and oils — Determination of alkalinity*

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

KS ISO 13547-2, *Copper, lead, zinc and nickel sulphide concentrates — Determination of arsenic Part 2 Acid digestion and inductively coupled plasma atomic emission spectrometric method*

KS ISO 21033, *Animal and vegetable fats and oils — Determination of trace elements by inductively coupled plasma optical emission spectroscopy (ICP-OES)*

3 Terms and definitions

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

3.1 crude avocado oil
raw vegetable oil composed primarily of glycerides of fatty acids obtained either from fleshy mesocarp of the avocado fruit (*Persea americana*) or processing of the whole avocado fruit.

3.2 foreign matter
any undesirable material visible with naked eye in a packaged crude avocado oil

3.3 food grade packaging material
packaging material, made of substances which are safe and suitable for the intended use and which will not impart any toxic substance or undesirable odour or flavour to the product

4 Requirements

4.1 General requirements

Crude avocado oil shall be:

- a) free from foreign odours
- b) free from foreign matter; and
- c) free from adulterants

4.2 Specific requirements

Crude avocado oil shall comply with requirements given in Table 1 when tested in accordance with the methods specified therein.

Table 1 — Specific requirements for crude avocado oil

S/N	Parameter	Requirement	Test Method
i)	Relative density (20 °C/ water at 20 °C)	0.910 – 0.920	KS ISO 6883
ii)	Refractive index, (ND 40°C)	1.458 – 1.470	KS ISO 6320
iii)	Saponification value, mg KOH/g, oil	170 – 202	KS ISO 3657
iv)	Iodine value (Wijs), g/100	78 – 95	KS ISO 3961
v)	Slip point, °C	6.0 - 9.0	KS ISO 6321
vi)	Moisture and volatile matter at 105 °C, % m/m max.	0.5	KS ISO 662

vii)	Copper (Cu), mg/kg max	0.4	KS ISO 21033
viii)	Iron (Fe), mg/kg max	5.0	
ix)	Free Fatty Acid (FFA) (as oleic acid) %, m/m max	15	KS ISO 660

5 Food additives and colouring agents

Food additives and colouring agents shall not be used in crude avocado oil.

6 Contaminants

6.1 Pesticide residues

Crude avocado oil shall comply with those maximum pesticide residue limits established by the Codex Alimentarius Commission for this commodity.

6.2 Heavy metals

Crude avocado oil shall comply with those maximum limits specified in Table 2 when tested in accordance with the methods specified therein.

Table 2 — Heavy metal contaminant limits in crude avocado oil

S/N	Contaminant	Maximum Limit mg/kg	Test Method
i)	Lead (Pb)	0.08	KS ISO 12193
ii)	Arsenic (As)	0.1	AOAC 952.13 or KS ISO 13547-2

7 Hygiene

Crude avocado oil shall be produced, prepared and handled in accordance with KS EAS 39.

8 Packaging, storage and transportation

8.1 Packaging

Crude avocado oil shall be packaged in containers made from food grade packaging material and sealed in a manner that will safeguard the hygienic, nutritional and organoleptic properties of the product throughout the shelf life of the product.

8.2 Storage and transportation

Storage and transportation of crude avocado oil in bulk shall be in accordance with KS CXC 36.

9 Labelling

Labelling of crude avocado oil shall be done in accordance with KS EAS 38.

10 Sampling

Sampling and sample preparation for test shall be carried out in accordance with KS ISO 5555 and KS ISO 661 respectively.

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Annex A
(informative)

Gas Liquid Chromatography (GLC) fatty acid composition

When required the fatty acid profile should be determined by Gas Liquid Chromatography. Ranges of fatty acids are as given in Table A.1.

Table A.1 — GLC fatty acid composition for crude avocado oil

Carbon configuration	Composition %
C12:0	ND
C14:0	< 0.3
C16:0	10.0 – 30.0
C16:1	4.0 – 17.1
C17:0	< 0.3
C17:1	< 0.1.
C18:0	0.1-1.3
C18:1	42.0 – 75.0
C18:2	7.8 – 19.0
C18:3	0.5 – 2.1
C20:0	< 0.7
C20:1	< 0.3
C20:2	ND
C22:0	< 0.5
C22:1	ND
C24:0	< 0.2

Annex B (informative)

Levels of desmethylsterols

When required, the levels of desmethylsterols in crude avocado oil as a percentage of total sterols shall be as given in Table A.2.

Table A.2 — Levels of desmethylsterols in crude avocado oil from authentic samples as a percentage of total sterols.

Desmethylsterol	Level in crude avocado oil ^{a)}
Cholesterol	ND - 0.5
Brassicasterol	ND - 0.5
Campesterol	4.0 - 8.3
Stigmasterol	0.3 - 2.0
Beta-sitosterol	79.0 - 93.4
Delta-5-avenasterol	2.0 - 8.0
Delta-7-stigmastenol	ND – 1.5
Delta-7-avenasterol	ND – 1.5
Others ND - 2.0	ND - 2.0
Total sterols (mg/kg)	3000 - 7500
^{a)} Avocado oil also contains 1.0 - 2.5% clerosterol ND – Non-detectable, defined as ≤ 0.05%	

Bibliography

- [1] ISO #####-#, *General title — Part #: Title of part*

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