DRAFT KENYA STANDARD

DKS 3027: 2024

ICS 67.200.10

First Edition

Refined avocado oil — Specification

TECHNICAL COMMITTEE REPRESENTATION

The following organizations were represented on the Technical Committee:

Agriculture and Food Authority (AFA) — Nuts and Oil Crops Directorate (NOCD) and Horticultural Crops Directorate (HCD

Agventure Limited

Bidco Africa Limited

Crofts Limited

Egerton University

Fairoils EPZ Limited

Gilloil Company Limited

Government Chemists Department

Jungle Nut Limited

Kakuzi PLC

Kapa Oil Refineries Limited

Kentaste Limited

Kenyatta National Hospital (KNH)

Kenya Industrial Research and Development Institute (KIRDI)

Kenya Medical Research Institute (KEMRI)

Micro and Small Enterprises Authority (MSEA)

University of Nairobi

Upfield Kenya Limited

Kenya Bureau of Standards — Secretariat

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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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 refined avocado oil. The development of this standard also aims at promoting local production, consumption and trade of refined avocado oil. The standard also seeks to provide quality and safety aspects that are required to sustain the avocado oil industry in the country and promote production of surplus which can be exported regionally and internationally

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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1 Scope

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

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*

CXG 66, *Guidelines for the use of flavourings*

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 3960, *Animal and vegetable fats and oils — Determination of peroxide 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
refined avocado oil
edible avocado oil obtained by mechanical procedures and/or solvent extraction and subjected to refining processes

3.2
foreign matter
any undesirable material visible with naked eye in a packaged refined 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

Refined avocado oil shall be:

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

4.2 Specific requirements

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

Table 1 — Specific requirements for refined avocado oil

S/N	Characteristic	Requirement	Test method
i.	Moisture and volatile matter at 105 °C, %, m/m, max.	0.2	KS ISO 662
ii.	Insoluble impurities, %, m/m, max.	0.05	KS ISO 663
iii.	Soap content, %, m/m, max.	0.005	KS ISO 10539
iv.	Acid value, (mg/KOH/g (max).	0.6	KS ISO 660
v.	Peroxide value, (mEq oxygen/kg (max.)	10	KS ISO 3960
vi.	Iron (Fe) mg/kg, max.	2.5	KS ISO 21033
vii.	Copper, mg/kg, max.	0.1	
viii.	Iodine Value (Wijs), g/100	70 - 95	KS ISO 3961

S/N	Characteristic	Requirement	Test method
ix.	Saponification value, mg KOH/g oil	177 - 199	KS ISO 3657
x.	Refractive index, (ND 40°C)	1.457 - 1.472	KS ISO 6320
xi.	Relative density (20 °C/ water at 20 °C)	0.910 - 0.925	KS IS0 6883

5 Fortification

Refined avocado oil shall be fortified in accordance with KS EAS 769.

6 Food additives and colouring agents

6.1 Food additives and colouring agents may be used in refined avocado oil

6.2 When used, the food additives and colouring agents shall comply with KS CXS 192.

7 Flavouring agents

7.1 Refined avocado oil may contain flavouring agents.

7.2 Flavouring agents when used in refined avocado oil shall comply with CXG 66.

8 Contaminants

8.1 Pesticide residues

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

8.2 Heavy metals

Refined 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 refined 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

9 Hygiene

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

10 Packaging

Refined 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.

11 Labelling

In addition to the labelling requirements specified in KS EAS 38, the following information shall be legibly and indelibly labelled:

a) name of the product as Refined avocado oil;

12 Nutrition and health claims

Refined avocado oil may have claims on nutrition and health. Such claims when declared shall comply with KS EAS 803, KS EAS 804 and KS EAS 805.

13 Sampling

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

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 refined 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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