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EAST AFRICAN STANDARD

Edible corn oil — Specification

EAST AFRICAN COMMUNITY

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Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in East Africa. It is envisaged that through harmonized standardization, trade barriers which are encountered when goods and services are exchanged within the Community will be removed.

In order to achieve this objective, the Partner States in the Community through their National Bureaux of Standards, have established an East African Standards Committee.

The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the private sectors and consumer organizations. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the procedures of the Community.

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EAST AFRICAN STANDARD

Edible groundnut/Peanut oil — Specification

1. Scope

This East African Standard specifies the requirements, sampling and test methods for virgin and refined maize/corn oil derived from the embryo (endosperm) of maize or corn (*Zea mays* L.).

2. Normative references

The following standards contain provisions, which, through reference in this text constitute provisions of this standard. All standards are subject to revision and, since any reference to a standard is deemed to be a reference to the latest edition of that standard, parties to agreements based on this standard are encouraged to take steps to ensure the use of the most recent editions of the standard indicated below. Information on currently valid national and international standards may be obtained from the corresponding Bureaux of standards.

CXG 66, Guidelines for the use of flavourings

CXS 192, General standard for food additives

EAS 38, Labelling of pre-packaged foods — General requirements

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

EAS 769, Fortified edible fats and oils — Specification

EAS 803, Nutrition labelling — Requirements

EAS 804, Claims on foods — General requirements

EAS 805, Use of nutrition and health claims — Requirements

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

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

ISO 662, Animal and vegetable fats and oils — Determination of moisture and volatile matter content

ISO 663, Animal and vegetable fats and oils — Determination of insoluble impurities content

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

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

3. Terms and definitions

For the purposes of this standard, the following terms and definitions shall apply

3.1

edible groundnut oils

edible maize/ corn oil edible oil derived from maize germ (the embryos of Zea mays L.)

3.2

virgin maize/corn oil edible maize/ corn oil obtained without altering its nature that may be obtained by use of mechanical procedures such as expelling or pressing, with or without the application of heat and without the use of solvents

3.3

cold-pressed maize/corn oil virgin maize/corn oil obtained without the application of heat

3.4

refined (non-virgin)maize/ corn oil edible maize/corn oil obtained by mechanical procedures and/or solvent extraction and subjected to refining processes

3.5

foreign matter any undesirable material visible with naked eye in a packaged edible maize/corn oil

3.6

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

Edible maize/corn oil shall

a) be obtained from germ (embryo) of the corn/maize kernels which are mature, clean and practically free from insect infestation;

b) be free from foreign matter;

c) be free from rancid or undesirable odour and/or taste;

d) be free from admixture with other oils; and

1. e) have colour characteristic of corn oil.

4.2. Specific Requirements

4.2 Specific requirements

Edible corn oil shall comply with the specific requirements given in Table 1 when tested in accordance with the test methods specified therein.

Table 1 — Specific requirements for edible corn oil

S/ N	Parameter	Requirement	Test method
i.	Moisture and volatile matter at 105 °C, % m/m, max.	0.2	ISO 662
ii.	Insoluble impurities, % m/m, max.	0.05	ISO 663
iii.	Soap content, % m/m, max.	0.005	ISO 10539
iv.	Acid value, mg/KOH/g max. • Virgin • Non-virgin (refined)	4.0 0.6	ISO 660
v.	Peroxide value, mEq oxygen/kg max. • Virgin • Non-virgin (refined)	15 10	ISO 3960
vi.	Iron (Fe), mg/kg, max. • Virgin • Non-virgin (refined)	5.0 1.5	ISO 21033
vii.	Copper, mg/kg, max. • Virgin • Non-virgin (refined)	0.4 0.1	
viii.	Iodine value, g I ₂ per 100 g	103 – 135	ISO 3961
ix.	Saponification value, mg KOH/g oil	187 – 195	ISO 3657
x.	Unsaponifiable matter, g/kg, max.	28	ISO 3596
xi.	Refractive index, at 40 °C	1.465 – 1.468	ISO 6320
xii.	Relative density at 20 °C	0.917 – 0.925	ISO 6883
xiii.	Colour units in a 25.4 mm Lovibond cell, max.	Red: 7 Yellow: 70	ISO 15305

5. Fortification

Edible corn oil may be fortified. When fortified, the product shall comply with EAS 769.

6. Food additives

6.1 Edible virgin corn oil shall not contain food additives.

6.2 Food additives when used in edible corn oil shall comply with CXS 192.

7. Flavouring agents

7.1 Edible virgin corn oil shall not contain flavouring agents.

7.2 Flavouring agents when used in edible refined corn oil shall comply with CXG 66.8. Contaminants

8.1 Pesticide residues

Edible corn oil shall comply with the maximum pesticide residue limits established by the Codex Alimentarius Commission for this commodity.

8.2 Heavy metals

Edible corn oil shall comply with the maximum limits for heavy metals given in Table 2 when tested in accordance with the test methods specified therein.

Table 2 — Limits for heavy metals in edible corn oil

S. No.	Contaminant	Limit (mg/kg, max.)	Test method
iv)	Lead, mg/kg	0.08	ISO 12193
v)	Arsenic, mg/kg	0.1	ISO 13547-2

8.3 Aflatoxins

Aflatoxin levels in edible corn oil shall not exceed the limits given in Table 3 when tested in accordance with the test method specified therein.

Table 3 — Aflatoxin limits for edible corn oil

S/N	Parameter	Limit µg/kg, max.	Test method
i.	Total aflatoxin	10	ISO 16050
ii.	Aflatoxin B1	5	

9. Hygiene

Edible corn oil shall be produced, processed, handled and stored in accordance with EAS 39

10. Packaging

Edible corn oil shall be packaged in food grade packaging material and sealed in a manner that safeguards the hygienic, nutritional and organoleptic properties of the product.

11. Labelling

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

a) name of the product as “maize oil” or “corn oil”.

b) type of the oil as:

i) virgin;

ii) cold-pressed; or

iii) non-virgin (refined).

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12. Nutrition and health claims

Edible corn oil may have claims on nutrition and health. Such claims when made shall comply with EAS 803, EAS 804 and EAS 805

13 Sampling

Sampling and sample preparation for testing shall be done in accordance with ISO 5555 and ISO 661, respectively.

Annex A (informative)

Gas Liquid Chromatography (GLC) fatty acid composition

Table A.1 provides the fatty acid profile range for edible corn oil, when tested using Gas Liquid Chromatography (GLC).

Table A.1 — Fatty acid composition for edible maize/corn oil

Carbon configuration	Composition %
C6:0	ND
C8:0	ND
C10:0	ND
C12:0	<0.3
C14:0	<0.3
C16:0	8.6-16.5
C16:1	<0.5
C17:0	<0.1
C17:1	<0.1
C18:0	<3.3
C18:1	20.0-42.2
C18:2	34-65.6
C18:3	<2.0
C20:0	0.3–1.0
C20:1	0.2–0.6
C20:2	<0.1
C22:0	<0.5
C22:1	<0.3
C22:2	ND
C24:0	<0.5
C24:1	ND
ND – non detectable, defined as $\leq 0.05\%$	

Annex A
(informative)

GLC Fatty acid composition

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

Table A.1 — Fatty acid composition for edible groundnut oil

Carbon configuration	Composition %
C6:0	ND
C8:0	ND
C10:0	ND
C12:0	ND–0.1
C14:0	ND–0.1
C16:0	5.0–14.0
C16:1	ND–0.2
C17:0	ND–0.1
C17:1	ND–0.1
C18:0	1.0–4.5
C18:1	35.0–80
C18:2	4.0–43.0
C18:3	ND–0.5

C20:0	0.7–2.0
C20:1	0.7–3.2
C20:2	ND
C22:0	1.5–4.5
C22:1	ND–0.6
C22:2	ND
C24:0	0.5–2.5
C24:1	ND–0.3
ND – non detectable, defined as $\leq 0.05\%$	

Bibliography

1. CODEX STAN. 21, 1981 (Rev 1 1989), Codex standard for edible arachis oil.
2. IS 11069:1984, Specifications for Refined, bleached, hydrogenated, winterised and deodorised (RBHWD) soybean oil. Indian Standards Institution.
3. IS 11476:1985, Glossary of terms related to fats and oils. Indian Standards Institution.
4. IS 11068:1984, Criteria for Edibility of fats and oils. Indian Standards Institution.

