##### DRAFT EAST AFRICAN STANDARD

Edible sunflower 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 the East African Community. It is envisaged that through harmonized standardization, trade barriers that are encountered when goods and services are exchanged within the Community will be removed.

The Community has established an East African Standards Committee (EASC) mandated to develop and issue East African Standards (EAS). The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the public and private sector organizations in the community.

East African Standards are developed through Technical Committees that are representative of key stakeholders including government, academia, consumer groups, private sector and other interested parties. 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 Principles and procedures for development of East African Standards.

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

The committee responsible for this document is Technical Committee EASC/TC 015, *Oil seeds, edible fats and oils*.

This third edition cancels and replaces the second edition (EAS 299:2013), which has been technically revised

Edible sunflower oil — Specification

# 1 Scope

This Draft East African Standard specifies the requirements and method of sampling and test for refined and virgin sunflower oil derived from the seeds of *Hellanthus annuus L*. intended for human consumption.

# 2 Normative references

The following documents are 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.

CXS 192 General Standard for Food additives

CXG 66 Guidelines for the Use of Flavourings

EAS 38, Labelling of pre-packaged foods — Specification

EAS 39, Code of practice for hygiene for food and drink manufacturing industries

EAS 769, Fortified edible oils and fats — Specification

EAS 804, Claims on foods —Requirements

EAS 805, Use of nutritional and health claims — Requirement

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 2590, General method for determining of arsenic — Diethyldithiocarbamate photometric method

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

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

ISO 3960, Animal and vegetable fats and oils — Determination of peroxide value — Iodometric (visual) endpoint determination

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

ISO 5555, Animal and vegetable fats and oils — Sampling

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

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

ISO 8294, Animal and vegetable fats and oils — Determination of copper, iron and nickel contents — Graphite furnace atomic absorption method

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

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

ISO 15305, Animal and vegetable fats and oils — Determination of Lovibond colour

# 3 Terms and definitions

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

3.1

edible sunflower oil

foodstuff which is composed primarily of glycerides of fatty acids obtained from seeds of Hellanthus annuus L. It may contain small amounts of other lipids such as phosphatides, of unsaponifiable constituents and of free fatty acids naturally present in the oil.

3.2

virgin sunflower oil

edible oil obtained, without altering the nature of the oil, by mechanical procedures, for example, expelling or pressing, and the application of heat only. It may have been purified by washing with water, settling, filtering and centrifuging only.

3.3

refined (non–virgin) sunflower oil

edible oil obtained by mechanical procedures and/or solvent extraction and subjected to refining processes.

3.4

cold pressed sunflower oil

edible oil obtained, without altering the nature of the oil by mechanical procedures, for example, expelling or pressing, without the application of heat. It may have been purified by washing with water, settling, filtering and centrifuging only.

3.5

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

3.6

Sunflower oil high-oleic acid

edible oil produced from high oleic acid oil-bearing seeds of varieties derived from sunflower seeds (seeds of *Helianthus annuus L*.)

3.7

Sunflower oil mid-oleic acid (mid-oleic acid sunflower oil)

edible oil produced from mid-oleic acid oil-bearing sunflower seeds (seeds of *Helianthus annuus L*.)

# 4 Requirements

## 4.1 General requirements

Sunflower oil shall be

1. derived from Sunflower seeds that are mature, clean, wholesome and free from contamination and insect infestation;
2. have acceptable taste and odour; and
3. be free from admixture with other oils.

## 4.2 Specific requirements

Edible sunflower oilshall comply with the requirements given in Table 1 when tested in accordance with the test methods specified therein.

Table 1 ― Specific requirements for sunflower oil

|  |  |  |  |
| --- | --- | --- | --- |
| **S/No.** | **Characteristic** | **Requirement** | **Test method** |
|  | Moisture and matter volatile at 105 o C, % m/m, max. | 0.2 | ISO 662 |
|  | Insoluble impurities, % m/m, max. | 0.05 | ISO 663 |
|  | Soap content, % m/m, max. | 0.005 | ISO 10539 |
|  | Acid value, mg KOH/g, max. | Virgin: 4  Refined: 0.6 | ISO 660 |
|  | Iodine value (Wij’s), g /100g  Sunflower oil  Sunflower oil, Mid oleic  Sunflower oil, High oleic | 78-141  94-122  78-90 | ISO 3961 |
|  | Peroxide value, mEq. of active oxygen/kg, max. | Virgin 15  Refined 10 | ISO 3960 |
|  | Colour, units in a 25.4 mm Lovibond cell, max. | Red: 4  Yellow: 50 | ISO 15305 |
|  | Unsaponifiable matter, g/kg, max. | 15 | ISO 3596 |
|  | Relative density Sunflower oil 20 oC/ water at 20 oC  Sunflower oil Mid oleic,20oC / water at 20 oC)  Sunflower oil High oleic 25oC / water at 20 oC) | 0.909 – 0.923  0.914-0.916  0.909-0.915 | ISO 6883 |
|  | Refractive index Sunflower oil, at 40 oC  High oleic at 25 oC  Mid oleic at 25 oC | 1.461- 1.475  1.467- 1.471  1.461- 1.471 | ISO 6320 |
|  | Iron, mg/kg, max. | Virgin: 5  Refined: 1.5 | ISO 8294 |
|  | Copper, mg/kg, max. | Virgin: 0.4  Refined 0.1 | ISO 8294 |
|  | Colour, units in a 25.4 mm Lovibond cell, max. | Red: 4  Yellow: 50 | ISO 15305 |

### 4.3 Fortification of edible sunflower oil

Edible sunflower oil may be fortified in accordance with EAS 769.

# 5 Food additives

**5.1** Virgin or cold pressed sunflower oils shall not contain food additives

**5.2** Refined sunflower oil may contain food additives as permitted in CXS 192

# 6 Flavouring agents

Flavouring used in refined edible sunflower oil shall comply with guidelines for use of flavourings CXG 66-2008.

# 7 Hygiene

Edible sunflower oil shall be produced, prepared and handled in accordance with EAS 39.

# 8 Contaminants

**8.1 Pesticide residues**

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

**8.2 Heavy metal contaminants**

Edible sunflower oil shall comply with the maximum limits specified in Table 2.

Table 2 ― Limits for heavy metal contaminants in edible sunflower oil

|  |  |  |  |
| --- | --- | --- | --- |
| **S/No.** | **Contaminant** | **Maximum limit** | **Test method** |
|  | Lead, mg/kg | 0.08 | ISO 12193 |
|  | Arsenic, mg/kg | 0.1 | ISO 2590 |

# 9 Aflatoxin limits in virgin sunflower oil

Aflatoxin limits in virgin edible sunflower oil shall be 10ppb for total aflatoxin and 5ppb for aflatoxin B1.

# 10 Packaging

Edible sunflower 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.

# 11 Labelling

**11.1** In addition to the labelling requirements in EAS 38 the name of the product shall be ‘sunflower oil’ and with the description as either:

1. virgin,
2. refined or non-virgin

**11.2** Claims

**11.2.1** Where Health and nutrition claims have been used, they shall be done in accordance to EAS 804 and EAS 805

**11.2.2** Where a claim on the content of oleic acid in sunflower oil is made, It shall comply with the requirements of Table 1

# 12 Sampling

Sampling shall be carried in accordance with ISO 5555 and samples prepared for testing according to ISO 661.

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 to Table A.3 for information

Table A.1 — GLC Fatty acid composition for sunflower oil

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Carbon Configuration | C12:0 | C14 |  | C16:0 | C16:1 | C:17;0 | C17:1 | C18:0 | C18:1 | C18:2 | C18:3 | C20:0 | C 20:1 | C22 :0 | C22:1 | C22:2 | C24:0 |
| Composition % |  | 0.2 |  | 5.0-7.6 | 0.3 | <0.2 | <0.1 | 2.7-6.5. | 14.0-39.4 | 48.3-74.0 | 0.3 | 1.5 | 0.3 | 0.3-1.5 | 0.3 |  | 0.5 |

Table A.2 — GLC Fatty acid composition for sunflower oil (High oleic)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Carbon Configuration | C14 | C16:0 | C16:1 | C:17;0 | C17:1 | C18:0 | C18:1 | C18:2 | C18:3 | C20:0 | C 20:1 | C22 :0 | C22:1 | C24:0 |
| Composition % | 0.1 | 2.6 - 5.0 | 0.1 | <0.1 | <0.1 | 2.9-6.2. | 75 – 90.7 | 2.1 - 17 | 0.3 | 1.5 | 0.1-0.5 | 0.5-1.6 | 0.3 | 0.5 |

Table A.2 — GLC Fatty acid composition for sunflower oil (mid oleic)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Carbon Configuration | C14 | C16:0 | C16:1 | C:17;0 | C17:1 | C18:0 | C18:1 | C18:2 | C18:3 | C20:0 | C 20:1 | C22 :0 | C22.2 | C24:0 |
| Composition % | 1 | 4.0 - 5.5 | 0.05 | <0.05 | <0.06 | 2.1-5.0. | 43.1 – 71.8 | 18.7 – 45.3 | 0.5 | 0.4 | 0.2-0.3 | 0.6-1.1 | 0.09 | 0.3 – 0.4 |