
Coffee oil – Specification

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Foreword

This Ethiopian Standard has been prepared under the direction of the Technical Committee for Fats and Oils (TC 23) and published by the Institute of Ethiopian Standards (IES).

The standard has been developed to address observed needs and to support the local industry and exporter in order to make progress through upraising competitiveness and maintain comparative market advantage both domestically and internationally.

In the preparation of this standard reference has been made to the following:

M I N I R E V I E W, The lipid fraction of the coffee bean, Karl Speer and Isabelle Kölling-Speer. Braz. J. Plant Physiol., 18(1):201-216, 2006

Physicochemical characterization of oil from roasted coffee, proceeding of The 8th AIC: Health and Life Sciences 2018 – Syiah Kuala University.

Quality attributes of roasted Arabica coffee oil extracted by pressing: composition, antioxidant activity, sun protection factor and other physical and chemical parameters

BRAZILIAN ROASTED COFFEE OIL OBTAINED BY MECHANICAL EXPELLING: COMPOSITIONAL ANALYSIS BY GC-MS1, Ciênc. Tecnol. Aliment., Campinas, 25(4): 677-682, out.-dez. 2005

Codex Stan 192, Codex standard for food additives

Codex Stan 193, Codex general standard for contaminants and toxins in food.

CAC/RCP 1 -1969, Rev. 4 -20031, Recommended International Code Of Practice General Principles of Food Hygiene.

CXG 21-1997, Principles and Guidelines for the Establishment and Application of Microbiological Criteria Related to Foods.

Acknowledgement is made for the use of information from the above publications.

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1. Scope

This Ethiopian Standard specifies the requirements of coffee oil derived from roasted coffee (*Coffea arabica*) bean used as an input for further refining processing and not intended for direct human consumption.

2. Normative References

The following referenced documents are indispensable for the application 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.

ES 73, *General standard for pre-packaged foods labeling.*

ES 577, *Recommended code of practice - General principles of food hygiene.*

ES ISO 660, *Animal and vegetable fats and oils - Determination of acid value and acidity.*

ES ISO 661, *Animal and vegetable fats and oils - Preparation of test sample.*

ES ISO 662, *Animal and vegetable fats and oils - Determination of moisture and volatile matter content.*

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

ES 929, *Code of practice - food hygiene management.*

ES 953, *Good manufacturing practice (GMP) for food processing companies.*

ES ISO 3596, *Animal and vegetable fats and oils - Determination of unsaponifiable matter - Method using diethyl ether.*

ES ISO 3657, *Animal and vegetable fats and oils - Determination of saponification value*

ES ISO 3960, *Animal and vegetable fats and oils - Determination of peroxide value - Iodometric (visual) endpoint determination.*

ES ISO 3961, *Animal and vegetable fats and oils - Determination of iodine value.*

ES ISO 5555, *Animal and vegetable fats and oils - Sampling.*

ES ISO 6320, *Animal and vegetable fats and oils - Determination of refractive index.*

ES ISO 6883, *Animal and vegetable fats and oils - Determination of conventional mass per volume (liter weight in air).*

ES ISO 8294, *Animal and vegetable fats and oils - Determination of copper, iron and nickel contents - Graphite furnace atomic absorption method.*

ES ISO 12193, *Animal and vegetable fats and oils - Determination of lead by direct graphite furnace atomic absorption spectroscopy.*

3. Terms and Definitions

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

3.1.

coffee oil

is an oil obtained from roasted coffee bean by hot or cold expression and/or solvent extraction which must be subjected to further processing in order to make it suitable for human consumption.

4. Requirements

4.1. General Requirements

Coffee oil shall:

4.1.1. be obtained by cold/hot press or solvent extraction;

4.1.2. be free from adulterants, and any other foreign matter, separated water and added coloring substances;

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4.1.3. be free from rancid odor;

4.1.4. have color characteristic of the designated product (brown to dark brown);

4.1.5. be viscous, oily liquid at 25 °C; and

4.1.6. be free from admixture with other oils.

4.2. Specific Requirements

The physical and chemical characteristics of Coffee oil shall conform to the requirements specified in the Table 1 below.

Table 1 Physio- chemical requirements of Coffee oil.

Characteristics	Limit	Test Methods
Relative density at 20 °C	0.920 – 0.970	ES ISO 6883
Refractive index at 20 °C	1.450 – 1.490	ES ISO 6320
Acid value, mg KOH/g Oil (as oleic acid), Max.	7.5	ES ISO 660
Saponification value, mg KOH/g Oil	149 – 230	ES ISO 3657
Iodine value in g/100g oil	84-120	ES ISO 3961
Unsaponifiable matter g/kg, Max.	8.0	ES ISO 3596
Moisture and volatile matter at 105 °C, % m/m, Max.	1.0	ES ISO 662
Insoluble impurity, %, m/m, Max.	1.0	ES ISO 663
Peroxide value mill eq. of active oxygen /kg oil, Max.	10.0	ES ISO 3960

5. Contaminants

5.1. Pesticides Residues

Coffee oil shall conform to those maximum pesticide residue limits established by the Codex Alimentarius Commission for general standard for contaminants and toxins in food and feed (Codex Stan193).

5.2. Mycotoxin Limit

Coffee oil shall comply with those maximum mycotoxin limits established by the Codex Alimentarius general standard for contaminants and toxins in food and feed (Codex Stan193)

Ochratoxin A (OTA) level in Coffee oil shall not exceed 5 ppb when tested according to AOAC 2000.09.

5.3. Metal Contaminants

Coffee oil shall comply with the maximum heavy metals and other contaminant limits specified in Table 2 below.

Table 2 Limits of metals contaminants in Coffee oil

Characteristics	Maximum Level (mg/kg)	Test Methods
Iron	5	ES ISO 8294
Copper	0.4	
Nickel	0.1	
Arsenic	0.1	AOAC 942.17
Lead	0.1	ES ISO 12193

6. Hygiene

It is recommended that the products covered by the provisions of this standard shall be produced, prepared and handled in accordance with the appropriate sections of ES 577, ES 929, ES 953 and CAC/RCP 1-1969, Rev. 3-1997.

The products shall comply with any microbiological criteria established in accordance with the Principles for the Establishment and Application of Microbiological Criteria for Foods (CXG 21-1997).

7. Food preservatives

If food additives like flavoring agent and preservatives are used in products covered by this standard, it shall comply with the codex standard for food additives (Codex Stan 192)

8. Packaging and Labeling

8.1. Packaging

8.1.1. Coffee 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.

8.1.2. Coffee oil shall be packed in containers which will safeguard the hygienic, nutritional and organoleptic qualities of the products.

8.1.3. The containers, including packaging material, shall be made of substances which are safe and suitable for their intended use. They shall not impart any toxic substance or undesirable odor or flavor to the product.

8.1.4. Each package shall be securely closed and sealed.

8.2. Labeling

The labeling of containers of coffee oil shall comply with the requirements of CES 73 and shall be legibly and indelibly marked with the following:

- a) Name of the product: "Coffee oil (non-edible) "
- b) Name and address of manufacturer and/or packer and/or distributor
- c) Batch /code number
- d) Date of manufacture
- e) Expiry date
- f) Net weight in Liter
- g) Storage recommendation
- h) Country of origin

9. Method of Sampling

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

Bibliography

AOAC 942.17, Determination of Arsenic in foods - Molybdenum blue method.

AOAC 2000.09, Ochratoxin A in Roasted Coffee

Organization and Objectives

The Institute of Ethiopian Standards (IES) is the national standards body of Ethiopia. IES is re-named by the proclamation number 1263/2021, from Ethiopian Standards Agency (ESA) to Institute of Ethiopian standards, with the mandate given by the regulation Number, 193/2010 and proclamation number, 1263/2021.

IES's objectives are:

- ❖ Develop Ethiopian standards and establish a system that enable to check whether goods and service are in compliance with the required standards,
- ❖ Facilitate the country's technology transfer through the use of standards,
- ❖ Develop national standards for local products and services so as to make them competitive in the international market.
- ❖ Conduct standards related research and provide training and technical support.

Ethiopian Standards

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For More Information?

Contact us at the following address.

The Head Office of IES is at Addis Ababa.

☎011-6460685, 011-6460565

☎011-6460880

✉2310AddisAbaba, Ethiopia

E-mail:info@ethiostandards.org

Website:www.ethiostandards.org



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