

Monofloral Honey — Specification

1. Scope

This Ethiopian Standard specifies requirements for major monofloral honeys (Accacia, Coffee, Heather, Black Cumin, Becium, Schefflera, Croton, Vernonia, Eucalyptus) produced by *Apis mellifera* bees from the nectar of predominant botanical source. Monofloral honey from other bee species may also be included, provided it satisfies the criteria outlined in this standard and is intended for human consumption.

The standard also covers monofloral honey which is packed in non-retail (bulk) containers and is intended for re-packing into retail packs.

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.

CES 73 – General standard for pre-packaged foods labeling

ES 361 – Canned fruits and vegetables, heat preserved, Determination of Tin content

ES ISO 6634 – Fruits, vegetables, and derived products – Determination of arsenic content – Silver diethyldithiocarbamate spectrophotometric method.

3. Terms and Definitions

For the purpose of this standard, in addition to ES 1202 the following definitions shall apply.

3.1

honey

represents a monofloral honey

3.2

monofloral honey

honey obtained predominantly from the nectar of the flowers of a single plant species, possessing characteristic sensory, physicochemical, and melissopalynological (pollen) properties that are consistent with its declared botanical origin.

3.3

botanical origin

the identity of the plant species or taxonomic group that predominantly supplies the nectar used by honey bees in the production of honey. The botanical origin of honey may be established using a combination of melissopalynological analysis, sensory evaluation, physicochemical characteristics, and traceability information.

3.4

geographical origin

is specific location or region where monofloral honey is produced by honey bees and harvested.

3.5

melissopalynology

the scientific study of pollen and other microscopic elements present in honey to determine its botanical and geographical origin.

3.6

predominant pollen

the pollen type occurring in the highest proportion in a honey sample, representing the principal botanical source.

3.7

sensory characteristics

the organoleptic properties of honey, including appearance, color, aroma, flavor, taste, texture, and crystallization characteristics as perceived by the human senses.

3.8

adulteration

any addition, substitution, removal, or modification of honey or its constituents that compromises its authenticity, quality, or compliance with this standard.

3.9

crystallization

the natural process by which glucose in honey forms crystals during storage, resulting in partial or complete solidification without affecting the authenticity of the honey.

4. Requirement

4.1 General Requirement

4.1.1 The honey shall originate from nectar of specific botanical dominance.

4.1.2 The honey shall possess botanical characteristics typical of that floral source.

4.1.3 All sugars included in honey shall have been collected by honey bees from the plant blossom.

4.1.4 No specific constituent shall be added nor removed from the honey.

4.1.5 The honey shall originate from a defined geographical area where the declared botanical source is naturally distributed and shall be traceable to the production region.

4.1.6 The honey shall not show signs of yeast fermentation or effervescence.

4.1.7 Honey shall have consistent appearance.

4.1.8 The honey taste, aroma, colour, crystallization and viscosity shall be characteristic of the declared botanical origin.

4.1.9 Honey shall be free from toxins which may constitute a health hazard.

4.1.10 Honey shall be free from adulterants.

4.1.11 The honey shall be free from foreign matter such as bees, dirt, scum, beeswax or any other extraneous matter.

Note: Any techniques that use a significant reduction in air pressure (vacuum air) is not permitted.

4.1 Specific Requirements

4.1.1 Monofloral honey shall comply with the specific requirements specified in ES 1202.

4.1.2 Botanical origin and Geographical location requirements

4.1.2.1 Each monofloral honey shall be originated from the botanical source and geographical location specified in Table 1 below.

Table 1 Botanical origin and geographical locations

Monofloral Honey	Botanical origin/source	Major geographical areas*
Becium Honey (Yetebeb/Yementesie Mar)	<i>Becium grandiflorum</i>	Central Tigray, Shiere, Adigrat, Wukro, Maichew, Lasta-Lallibela; Wag Humra; Parts of North Gondar
Schefflera Honey (Yegetemie Mar)	<i>Schefflera abyssinica</i>	Kaffa, Sheka, Bench Sheko, Illubabor, Jimma, Bunno Bedele, Maji, Guji, Mejeng
Coffee Honey (Yebuna Mar)	<i>Coffea arabica</i>	Kaffa, Sheka, Bench Sheko, Jimma, Illubabor, Bunno Bedele, Guji, Yirga Cheffe, Wonago
Croton Honey (Yebisana Mar)	<i>Croton macrostachyus</i>	Jimma, Illubabor, West Wollega, East Wollega, Horo Guduru Wollega, Bale, Guji, Awi, East Gojjam, West Gojjam, Sidama, Hadiya, Gurage, Kaffa, Sheka, Bench Sheko,
Eucalyptus Honey (Yebahir Zaf Mar)	<i>Eucalyptus spp.</i>	Addis Ababa, North Shewa, West Shewa, Gurage, South Wollo, North Wollo, East Gojjam, West Gojjam, Awi, North Gondar, South Gondar, Siltie
Acacia Honey (Yegirar Mar)	<i>Acacia spp.</i>	Awash (40/7/ Metehara), Jimma Lowland, Shebelle, Guji, Bale lowlands, East Hararghe, West Hararghe, South Omo, Konso, Dire Dawa, Metema, Humera, Wage Himmra, Arba Minche, Teltelie, Jinka
Vernonia Honey (Yegirawa Mar)	<i>Vernonia spp.</i>	Jimma, Illubabor, Kaffa, Bench Sheko, Sheka, West Wollega, East Wollega, Horo Guduru Wollega, Keleme Wollega, West Gojjam
Heather Honey (Yeasta Mar)	<i>Erica arborea</i>	Bale Mountains, Simien Mountains, Choke Mountains, Lallibela, Guassa Plateau, highlands of Arsi, Tigray mountains
Black Cumin Honey (Yetikur Azmud Mar)	<i>Nigella sativa</i>	Gonder, Bale-Sinana, South Wello (Kallu, Ambassel), North Wello (Habru, Guba Lafto), Bale Goro, Arsi Shirka, Gurage

*The geographical origin shall be verified through beekeeping records, production records, and, where applicable, supported by melissopalynological analysis, physicochemical parameters, botanical marker compounds, and other analytical methods.

4.1.3 The monoflora honey shall also comply with the requirements specified in Table 2 below.

Table 2 Monoflora honey requirements

Characteristics	Coffee honey	Acacia honey	Heather honey	Black Cumin honey	Becium honey	Schefflera honey	Vernonia honey	Croton honey	Eucalyptus honey	Test Methods
Pollen count, %, Min.	45									Annex A
Colour, mm Pfund	114	18 – 34	86 – 114	86 – 114	9	9	86 – 114	51 – 85	35 – 50	AOAC 985.25
Aroma	Floral, fruity and light citrus	Delicate floral and mildly fruity	Woody, resinous and strong floral	Black Cumin-like spicy, herbal and aromatic	Pleasant floral aroma	Rich floral, mildly citrus like and fruity	Herbal, strong floral and slightly resinous	Herbal, Woody, mildly spicy and aromatic	Eucalypt/menthol-like, herbal, mildly medicinal and floral	Organoleptic Test*
Taste	Sweet	Smoothly Sweet	Sweet with slight bitterness moderate y acidic	Sweet with slight bitterness , slightly pungent	Minty-herbal sweet	Rich floral-fruity slightly sweet	Sweet with moderate bitterness after taste	Sweet with slight acidity	Sweet with mild medicinal after taste	Organoleptic Test*

* Use the guideline of ES ISO 13299, ES ISO 8586, ES ISO 6658, ES ISO 11035 and ES ISO 5492

5. Food additives

5.1 Monofloral honey shall not contain any added substances, either in the form of additions or additives.

5.2 Monofloral honey acidity shall not be changed artificially.

6. Contaminants

6.1 Metal contaminants

6.1.1 Monofloral honey shall be free from metal contaminants in amounts which may represent a hazard to human health. The products covered by this standard shall comply with those maximum levels for metal contaminants established by the Codex Alimentarius Commission.

6.1.2 In particular, the levels of metallic contaminants in monofloral honey shall not exceed the limits specified in Table 3 below.

Table 3 Limits for metal contaminants

Characteristic	Maximum limits, mg/kg (ppm)	Test Methods
Arsenic	0.1	ES ISO 6634
Lead	0.1	AOAC 999.10
Copper	0.1	
Zinc	5.0	
Tin	150	ES 361

6.2 Residues of pesticides and veterinary drugs

The products covered by this standard shall comply with those maximum residue limits for honey or related products by the Codex Alimentarius Commission.

7. Hygiene

7.1 The product shall be harvested and handled in accordance with ES 577, ES 929 and ES ISO 22002-1

7.2 The products should comply with any microbiological criteria established in accordance with the Principles for the Establishment and Application of Microbiological Criteria for Foods (CAC/GL 21-1997).

7.3 Monofloral honey shall be free from visible mold and as far as practicable, be free from inorganic or organic foreign matter to its composition, such as insects, insect debris, brood or grains of sand, or soil, when the honey is offered for sale or is used in any product for human consumption.

7.4 Monofloral honey should not contain toxic substances arising from microorganisms or plants in an amount, which may constitute a hazard to health.

8. Packing and Labelling

8.1 Packing

8.1.1 Monofloral honey shall be packed in suitable packages which shall be clean, sound and free from any contaminants.

8.1.2 The packaging material shall be of food grade quality and shall be securely closed and sealed.

8.1.3 Packing materials shall not impart any odor to the honey. Particularly if used containers are recycled, care shall be taken that they are absolutely clean and have no residual odor.

8.2 Labelling

The labelling shall comply with the requirements of CES 73, and shall be legibly and indelibly marked with the following:

- a) Name of the product including Botanical origin as **“Coffee honey/Yebuna Mar”** or **“Acacia honey/Yegrar Mar”** or **“Heather honey/Yeasta Mar”** etc.
- b) Net weight in SI unit
- c) Name and address of the processor/packer
- d) Production year (dd/mm/yyyy)
- e) Lot/Batch or code number
- f) Best before (dd/mm/ yyyy)
- g) Country of origin
- h) Geographical locations

9. Storage and transportation

9.1 Monofloral honey shall be stored and transported in sealed air-tight containers.

9.2 Monofloral honey shall be stored and transported at temperatures that do not compromise its shelf life and quality.

9.3 It shall not come into contact with any substance with peculiar smells that can cause an off-flavour, or are poisonous, corrosive and potentially polluting.

10. Sampling Methods

Sampling shall be done in accordance with the procedure indicated in ES 1202.

Annex A (normative)

Melissopalynological Analysis of Honey (Pollen Analysis)

A.1 Principle

The method is based on the identification, counting, and evaluation of pollen grains naturally present in honey. The pollen spectrum is used to determine the botanical origin and support the geographical authentication of monofloral honey.

A.2 Sample Preparation

A representative honey sample shall be thoroughly homogenized before analysis. Approximately 10 g of honey shall be weighed and dissolved in 20 mL of distilled water. The solution shall be centrifuged to concentrate the pollen grains.

A.3 Pollen Recovery

A.3.1 Transfer the diluted honey solution into centrifuge tubes.

A.3.2 Centrifuge at approximately 3,000 rpm for 10–15 minutes [1107g (RCF)].

A.3.3 Carefully discard the supernatant without disturbing the sediment.

A.3.4 Prepare a microscopic slide from the pollen sediment.

A.3.5 Mount the sample using suitable mounting media (e.g., glycerine jelly or fuchsin-stained glycerine jelly).

Cover with a cover slip and allow the preparation to stabilize before examination.

A.4 Microscopic Examination

A.4.1 Examine the prepared slides using a light microscope at 400 X magnification for identification and 1000 X magnification when necessary.

A.4.2 Identify pollen grains based on:

A.4.2.1 Shape

A.4.2.2 Size

A.4.2.3 Aperture type

A.4.2.4 Exine ornamentation

A.4.2.5 Reference pollen collection and published pollen atlases

A.5 Pollen Counting

A minimum of 500 pollen grains shall be counted per sample where possible.

The relative frequency of each pollen type shall be calculated as:

$$\text{Relative frequency (\%)} = \frac{\text{Number of pollen grains of a species} \times 100}{\text{Total pollen grains counted}}$$

A.6 Reference Materials

Identification shall be supported by:

A.6.1 Authenticated pollen reference collections;

A.6.2 Adgaba, 2007;

A.6.3 Regional pollen atlases;

A.6.4 Botanical reference specimens from the production area.

A.7 Reporting of Results

The report shall include:

A.7.1 Sample identification

A.7.2 Botanical origin declared

A.7.3 Total number of pollen grains counted

A.7.4 Identified pollen taxa

A.7.5 Relative frequency (%) of each pollen type

A.7.6 Dominant pollen type

A.7.7 Interpretation of botanical origin

A.8 Reference Method

The method should be aligned with the International Honey Commission (IHC) Harmonized Methods of Melissopalynology

DRAFT STANDARDS FOR COMMENT

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- ❖ 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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