
Fruit Nectars - Specifications

Foreword

This Ethiopian Standard has been prepared under the direction of the Technical committee for Fruits and Vegetables (TC 13) and published by the Ethiopian Standards Agency (ESA).

The standard has been developed to address observed needs and to support the local industry 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:

DUS 818: 2018, *Fruit Juice and Nectars- Specification, Uganda National Bureau of Standards.*

Codex Stan 192, General standard for food additives.

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

Codex Stan 247, Codex general standard for fruit juices and nectars.

Acknowledgment has been made for the use of information from the above publications.

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Fruit Nectars - Specifications

1. Scope

This Ethiopian Standard specifies requirements for fruit nectars intended for direct human consumption or for further processing.

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 prepackaged foods - Labeling.

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

ES ISO 763, Fruit and vegetable products - Determination of ash insoluble in hydrochloric acid.

ES 929, Code of practice-food hygiene management.

ES 1202, Honey-Specification.

ES ISO 1842, *Fruits and vegetables products - Determination of pH.*

ES ISO 2172, Fruit juice - Determination of soluble solids content - Pycnometric method.

ES ISO 2173, Fruit and vegetable products - Determination of soluble solids - Refractometric method.

ES ISO 2447, Fruits, vegetables and derived products - Determination of tin content.

ES ISO 2448, *Fruits and vegetable products - Determination of ethanol content.*

ES 2834, Sampling plans for prepackaged foods (AQL6.5).

ES ISO 4832, Microbiology of food and animal feeding stuffs - Horizontal method for the enumeration of Coliforms - Colony-count technique.

ES ISO 4833-1, Microbiology of the food chain - Horizontal method for the enumeration of microorganisms - Part 1: Colony count at 30 °C by the pour plate technique.

ES ISO 6633, Fruits, vegetables and derived products - Determination of lead content - Flameless atomic absorption spectrometric method.

ES ISO 6636-2, Fruits, vegetables and derived products - Determination of zinc content - Atomic absorption spectrometric method.

ES ISO 6637, Fruits, vegetables and derived products - Determination of mercury content - Flameless atomic absorption method.

ES ISO 7251, Microbiology of food and animal feeding stuffs - Horizontal method for the detection and enumeration of presumptive *Escherichia coli* - Most probable number technique.

ES ISO 7952, Microbiology of food and animal feeding stuffs - Horizontal method for the detection and enumeration of presumptive *Escherichia coli* - Most probable number technique.

ES ISO 9526, Fruits, vegetables and derived products - Determination of iron content by flame atomic absorption spectrometry.

ES ISO 17239, Fruits, vegetables and derived products - Determination of arsenic content - Method using hydridegeneration atomic absorption spectrometry.

ES ISO 21527- 1, Microbiology of food and animal feeding stuffs - Horizontal method for the enumeration of yeasts and moulds - Part 1: Colony count technique in products with water activity greater than 0,95.

ES ISO 21527- 2, Microbiology of food and animal feeding stuffs - Horizontal method for the enumeration of yeasts

and moulds - Part 2: Colony count technique in products with water activity less than or equal to 0.95.

ES ISO 22002-1, Prerequisite programmes on food safety - Part 1 Food manufacturing.

3. Terms and definitions

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

3.1.

authenticity

maintenance of the product's essential physical, chemical, organoleptic and nutritional characteristics of the fruit(s) from which it is derived.

3.2.

brix

percent of soluble solids content of a liquid as determined by a refractometer calibrated at 20 °C and read as degrees Brix' on the International Sucrose Scale.

4. Product Descriptions

4.1. Species

The species indicated as the botanical name in the Annex shall be used in the preparation of fruit purees and fruit nectars bearing the product name for the applicable fruit.

For fruit species not included in the Annex, the correct botanical or common name shall apply.

4.2. Fruit puree

Fruit puree for use in the manufacture of fruit nectars is the unfermented but fermentable product obtained by suitable processes for example, by sieving, grinding, and milling the edible part of the whole or peeled fruit without removing the juice. The fruit shall be sound, appropriately mature, and fresh or preserved by physical means or by treatment(s) applied in accordance with the applicable provisions of the Codex Alimentarius Commission (CODEX STAN 247-2005)

Fruit puree may have restored aromatic substances and volatile flavor components, all of which shall be obtained by suitable physical means, and all of which shall be recovered from the same kind of fruit. Pulp and cells obtained by suitable physical means from the same kind of fruit may be added.

4.3. Concentrated fruit puree

Concentrated fruit puree for use in the manufacture of fruit nectars is obtained by the physical removal of water from the fruit puree in an amount sufficient to increase the Brix level to a value at least 50 % greater than the Brix value established for reconstituted juice from the same fruit, as indicated in the Annex.

Concentrated fruit puree may have restored aromatic substances and volatile flavour components, all of which shall be obtained by suitable physical means, and all of which shall be recovered from the same kind of fruit.

4.4. Fruit nectar

Fruit nectar is the unfermented but fermentable product obtained by adding water with or without the addition of sugars, syrups and/or honey, and/or food additive sweeteners to:

- a) Fruit juice,
- b) Fruit juice from concentrate,
- c) concentrated fruit juice,
- d) Water extracted fruit juice,
- e) dehydrated fruit juice,
- f) Powdered fruit juice,
- g) Fruit puree,
- h) Concentrated fruit puree or to

- i) Any mixture of these products (a to h)

Aromatic substances, volatile flavor components, pulp and cells all of which shall be recovered from the same kind of fruit and to be obtained by suitable physical means may be added. That product moreover shall conform to the products defined for fruit nectars as indicated in the Annex.

4.5. Blended or mixed Fruit Nectars

Blended or mixed fruit nectar is the unfermented but fermentable product obtained by adding water with or without the addition of sugars, syrups and/or honey, and/or sweeteners, obtained from two or more different kinds of fruits.

The blend can be obtained from the following;

- a) Fruit juice
- b) Fruit juice from concentrate,
- c) Concentrated fruit juice,
- d) Water extracted fruit juice,
- e) Dehydrated fruit juice,
- f) Powdered fruit juice,
- g) Fruit puree,
- h) Concentrated fruit puree

5. Ingredients

5.1. Basic Ingredients

5.1.1. Fruits

Edible part of sound, appropriately mature and fresh fruit or of fruit maintained in sound condition by suitable means.

5.1.2. Water

The water used for the manufacture of fruit drinks shall be drinking water and complying with the requirements of CES 58.

5.2. Optional ingredients

5.2.1. Sugars

Sugars as defined in Ethiopian standards with less than 2 % moisture: Sucrose, glucose (dextrose anhydrous) or fructose may be added only to products.

5.2.2. Honey

Honey, as defined in ES 1202, may be used.

6. Requirements

6.1. General Requirements

The fruit nectars shall:

- a) retain no more water from washing, steaming or other preparatory operations than technologically unavoidable.
- b) have the characteristic color, aroma and flavor of fruit from which it is made.
- c) be free from seeds, bits of seed or bits of peel.
- d) be free from deterioration or spoilage.
- e) be clean and free from foreign matter, insects and rodent contamination.

6.2. Specific requirements

Fruit nectars shall conform to the compositional requirement in Table 1 below.

Table 1 - Compositional requirement of fruit nectars

Characteristics	Requirement	Method of test
Ethanol, mg/kg, Max.	3	ES ISO 2448
Acid insoluble ash, mg/kg, Max.	20	ES ISO 763
Brix, Min.	See Annex	ES ISO 2172 ES ISO 2173
pH, Max.	4.5	ES ISO 1842

7. Food additives

Fruit Nectar may contain only permitted additives in accordance with Codex Stan 192.

8. Contaminants

The products covered by this Standard shall comply with the maximum levels of the General Standard for Contaminants and Toxins in Food and Feed (Codex Stan 193).

8.1 Pesticide residues

Fruit juice drinks shall comply with those maximum pesticide residue limits established by the Codex Alimentarius Commission for this product.

8.2 Metal contaminants

Fruit juice drinks shall not exceed levels of metals specified in Table 2 below.

Table 2 - Metal contaminants

Characteristic	Maximum level (mg/kg)	Test methods
Arsenic (as As)	0.2	ES ISO 17239
Lead (as Pb)	0.3	ES ISO 6633
Copper (as Cu)	5.0	ES ISO 7952
Zinc (as Zn)	5.0	ES ISO 6636-2
Iron (as Fe)	15	ES ISO 9526
Tin (as Sn)	250	ES ISO 2447
Mercury (as Hg)	0.01	ES ISO 6637

9. Hygiene

9.1. The products shall be prepared under hygienic conditions in accordance with ES 577, ES 929 and ES ISO 22002-1.

9.2. The products shall be free from pathogenic organisms and shall comply with the microbiological limits indicated in Table3.

Table 3 - Microbiological limits for fruit nectars

Characteristic	Limits	Test method
Total plate count, (cfu/g), Max.	50	ES ISO 4833-1
<i>Escherichia coli</i> , (cfu/g).	Absent	ES ISO 7251
Coliform count, per 100 mL.	Absent	ES ISO 4832
Yeast and mould count, cfu/ml, Max	5	ES ISO 21527-1 ES ISO 21527- 2

10. Packaging and Labeling

10.1. Packaging

10.1.1 Shall be clean, sound, free from insects and fungi infection and the packing material shall be of food grade quality.

10.1.2 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.

NOTE: Packaging materials may be required to meet different regulations in Ethiopia.

10.2 Labeling

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

- a) Name of product
- b) Name and physical and postal address of manufacturer, exporter/importer;
- c) Batch or identification code;
- d) Net weight in liter;
- e) Expiry date;
- f) List of ingredients;
- g) Storage instruction;
- h) Country of origin;
- i) Date of manufacture;
- j) Any other information required by the purchaser.

11. Methods of sampling

Sampling of fruit nectar shall be done in accordance with ES 2834.

Annex

Minimum brix¹⁴ level for reconstituted juice and reconstituted purée and minimum juice and/or purée content for fruit nectars (% v/v)¹⁵ at 20 °C

Botanical Name	Fruit's Common Name	Minimum Brix Level for Reconstituted Fruit Juices and Reconstituted Purée	Minimum Juice and/or Purée Content (% v/v) for Fruit Nectars
<i>Actinidia deliciosa</i> (A. Chev.) C. F. Liang & A. R. Ferguson	Kiwi	(*) ¹⁶	(*) ¹⁶
<i>Anacardium occidentale</i> L.	Cashewapple	11.5	25.0
<i>Ananascomosus</i> (L.) Merrill <i>Ananassativis</i> L. Schult. f.	Pineapple	12.8 ¹⁷ It is recognized that in different countries, the Brix level may naturally differ from this value. In cases where the Brix level is consistently lower than this value, reconstituted juice of lower Brix from these countries introduced into international trade will be acceptable, provided it meets the authenticity methodology listed in the General Standard for Fruit Juices and Nectars and the level will not be below 10°Brix for pineapple juice and apple juice.	40.0
<i>Annonamuricata</i> L.	Soursop	14.5	25.0
<i>Annonasquamosa</i> L.	Sugar Apple	14.5	25.0
<i>Averrhoacarambola</i> L.	Carambola / Starfruit	7.5	25.0
<i>Carica papaya</i> L.	Papaya	(*) ¹⁶	25.0
<i>Chrysophyllumcainito</i>	Star Apple	(*) ¹⁶	(*) ¹⁶
<i>Citrulluslanatus</i> (Thunb.) Matsum. & Nakai var. <i>Lanatus</i>	Water Melon	8.0	40.0
<i>Citrus aurantifolia</i> (Christm.) (swingle)	Lime	8.0 ¹⁷	According to the legislation of the importing country
<i>Citrus aurantium</i> L.	Sour Orange	(*) ¹⁶	50.0

¹⁴For the purposes of the Standard the Brix is defined as the soluble solids content of the juice as determined by the method found in the Section on Methods of Analysis and Sampling.

¹⁵If a juice is manufactured from a fruit not mentioned in the above list, it must, nevertheless, comply with all the provisions of the Standard, except that the minimum Brix level of the reconstituted juice shall be the Brix level as expressed from the fruit used to make the concentrate.

¹⁶No data currently available. The minimum Brix level of the reconstituted juices shall be the Brix level as expressed from the fruit used to make the concentrate.

¹⁷Acid corrected as determined by the method for total titratable acids in the Section on Methods of Analysis.

Botanical Name	Fruit's Common Name	Minimum Brix Level for Reconstituted Fruit Juices and Reconstituted Purée	Minimum Juice and/or Purée Content (% v/v) for Fruit Nectars
<i>Citrus limon</i> (L.) Burm. f. <i>Citrus limonum</i> Rissa	Lemon	8.0 ¹⁷	According to the legislation of the importing country
<i>Citrus paradisi</i> Macfad	Grapefruit	10.0 ¹⁷	50.0
<i>Citrus paradisi</i> , <i>Citrus grandis</i>	Sweetie grapefruit	10.0	50.0
<i>Citrus reticulata</i> Blanca	Mandarine/Tangerine	11.8 ¹⁷	50.0
<i>Citrus sinensis</i> (L.)	Orange	11.8 – 11.2 ¹⁷ and consistent with the application of national legislation of the importing country but not lower than 11.2. It is recognized that in different countries, the Brix level may naturally differ from this range of values. In cases where the Brix level is consistently lower than this range of values, reconstituted juice of lower Brix from these countries introduced into international trade will be acceptable, provided it meets the authenticity methodology listed in the General Standard for Fruit Juices and Nectars and the level will not be below 10°Brix.	50.0
<i>Cocos nucifera</i> L. ¹⁸	Coconut	5.0	25.0
<i>Cucumis melo</i> L.	Melon	8.0	35.0
<i>Cucumis melo</i> L. subsp. <i>melo</i> var. <i>inodorus</i> H. Jacq.	Casaba Melon	7.5	25.0
<i>Cucumis melo</i> L. subsp. <i>melo</i> var. <i>inodorus</i> H. Jacq.	Honeydew Melon	10.0	25.0
<i>Cydonia oblonga</i> Mill.	Quince	11.2	25.0
<i>Diospyros khaki</i> Thunb.	Persimmon	(*) ¹⁶	40.0
<i>Empetrum nigrum</i> L.	Crowberry	6.0	25.0
<i>Eriobotrya japonica</i>	Loquat	(*) ¹⁶	(*) ¹⁶
<i>Eugenia syriaca</i>	Guava berry Birch berry	(*) ¹⁶	(*) ¹⁶
<i>Eugenia uniflora</i> Rich.	Suriname Cherry	6.0	25.0
<i>Ficus carica</i> L.	Fig	18.0	25.0

¹⁸This product is 'coconut water' which is directly extracted from the coconut without expressing the coconut meat.

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Botanical Name	Fruit's Common Name	Minimum Brix Level for Reconstituted Fruit Juices and Reconstituted Purée	Minimum Juice and/or Purée Content (% v/v) for Fruit Nectars
<i>Fortunella Swingle</i> sp.	Kumquat	(*) ¹⁶	(*) ¹⁶
<i>Fragaria x. ananassa</i> Duchense (<i>Fragariachiloensis</i> Duchesne <i>Fragariavirginiana</i> Duchesne)	Strawberry	7.5	40.0
<i>Genipaamericana</i>	"Genipap"	17.0	25.0
<i>Hippophaeelaeguacae</i>	Sea Buckthorn	(*) ¹⁶	25.0
<i>Hippophaerhamnoides</i> L.	Buckthornberry = Sallow-thornberry	6.0	25.0
<i>Litchi chinensis</i> Sonn.	Litchi/Lychee	11.2	20.0
<i>Lycopersiconesculentum</i> L.	Tomato	5.0	50.0
<i>Malpighia</i> sp. (Moc. & Sesse)	Acerola (West Indian Cherry)	6.5	25.0
<i>Malusdomestica</i> Borkh.	Apple	11.5 It is recognized that in different countries, the Brix level may naturally differ from this value. In cases where the Brix level is consistently lower than this value, reconstituted juice of lower Brix from these countries introduced into international trade will be acceptable, provided it meets the authenticity methodology listed in the General Standard for Fruit Juices and Nectars and the level will not be below 10°Brix for pineapple juice and apple juice.	50.0
<i>Malusprunifolia</i> (Willd.) Borkh. <i>Malussylvestris</i> Mill.	Crab Apple	15.4	25.0
<i>Mammeaamericana</i>	Mammee Apple	(*) ¹⁶	(*) ¹⁶
<i>Mangiferaindica</i> L.	Mango	13.5	25.0
<i>Morus</i> sp.	Mulberry	(*) ¹⁶	30.0
<i>Musa</i> species including <i>M. acuminata</i> and <i>M. paradisiaca</i> but excluding other plantains	Banana	(*) ¹⁶	25.0
<i>Passifloraedulis</i>	Yellow Passion Fruit	(*) ¹⁶	(*) ¹⁶
<i>Passifloraedulis</i> Sims. f. <i>edulis</i> <i>Passifloraedulis</i> Sims. f. <i>Flavicarpa</i> O. Def.	Passion Fruit	12 ¹⁷	25.0

Botanical Name	Fruit's Common Name	Minimum Brix Level for Reconstituted Fruit Juices and Reconstituted Purée	Minimum Juice and/or Purée Content (% v/v) for Fruit Nectars
<i>Passiflora quadrangularis</i>	Passion Fruit	(*) ¹⁶	(*) ¹⁶
<i>Phoenix dactylifera</i> L.	Date	18.5	25.0
<i>Pouteria sapota</i>	Sapote	(*) ¹⁶	(*) ¹⁶
<i>Prunus armeniaca</i> L.	Apricot	11.5	40.0
<i>Prunus avium</i> L.	Sweet Cherry	20.0	25.0
<i>Prunus cerasus</i> L.	Sour Cherry	14.0	25.0
<i>Prunus cerasus</i> L. cv. Stevensbaer	Stonesbaer	17.0	25.0
<i>Prunus domestica</i> L. subsp. <i>domestica</i>	Plum	12.0	50.0
<i>Prunus domestica</i> L. subsp. <i>domestica</i>	Prune	18.5	25.0
<i>Prunus domestica</i> L. subsp. <i>domestica</i>	Quetsche	12.0	25.0
<i>Prunus persica</i> (L.) Batsch var. <i>nucipersica</i> (Suckow) c. K. Schneid.	Nectarine	10.5	40.0
<i>Prunus persica</i> (L.) Batsch var. <i>persica</i>	Peach	10.5	40.0
<i>Prunus spinosa</i> L.	Sloe	6.0	25.0
<i>Psidium guajava</i> L.	Guava	8.5	25.0
<i>Punicagranatum</i> L.	Pomegranate	12.0	25.0
<i>Pyrus arbustifolia</i> (L.) Pers.	Aronia/Chokeberry	(*) ¹⁶	(*) ¹⁶
<i>Pyrus communis</i> L.	Pear	12.0	40.0
<i>Ribes nigrum</i> L.	Black Currant	11.0	30.0
<i>Ribes rubrum</i> L.	Red Currant	10.0	30.0
<i>Ribes rubrum</i> L.	White Currant	10.0	30.0
<i>Ribes uva-crispa</i>	Red Gooseberry	(*) ¹⁶	30.0
<i>Ribes uva-crispa</i> L.	Goosberry	7.5	30.0
<i>Ribes uva-crispa</i> L.	White Goosberry	(*) ¹⁶	30.0
<i>Rosa canina</i> L.	Cynorrhodon	(*) ¹⁶	40.0
<i>Rosa</i> sp. L.	Rosehip	9.0	40.0
<i>Rubus chamaemorus</i> L.	Cloudberry	9.0	30.0
<i>Rubus chamaemorus</i> L. Morus hybrid	Mulberry	(*) ¹⁶	40.0
<i>Rubus fruticosus</i> L.	Blackberry	9.0	30.0
<i>Rubus hispidus</i> (of North America) <i>R. caesius</i> (of Europe)	Dewberry	10.0	25.0

Botanical Name	Fruit's Common Name	Minimum Brix Level for Reconstituted Fruit Juices and Reconstituted Purée	Minimum Juice and/or Purée Content (% v/v) for Fruit Nectars
<i>Rubusidaeus</i> L. <i>Rubusstrigosus</i> Michx.	Red Raspberry	8.0	40.0
<i>Rubusloganobaccus</i> L. H. Bailey	Loganberry	10.5	25.0
<i>Rubusoccidentalis</i> L.	Black Raspberry	11.1	25.0
<i>Rubusursinus</i> Cham. & Schtdl.	Boysenberry	10.0	25.0
<i>Rubusvitifolius</i> x <i>Rubusidaeus</i> <i>Rubusbaileyanis</i>	Youngberry	10.0	25.0
<i>Sambucusnigra</i> L. <i>Sambucuscanadensis</i> .	Elderberry	10.5	50.0
<i>Solanumquitoense</i> Lam.	“Lulo”	(*) ¹⁶	(*) ¹⁶
<i>Sorbusaucuparia</i> L.	Rowanberry	11.0	30.0
<i>Sorbusdomestica</i>	Sorb	(*) ¹⁶	30.0
<i>Spondialutea</i> L.	“Cajá”	10.0	25.0
<i>Spondiastuberosa</i> Arruda ex Kost.	“Umbu”	9.0	25.0
<i>Syzygiunjambosa</i>	Pome Apple	(*) ¹⁶	(*) ¹⁶
<i>Tamarindusindica</i>	Tamarind (Indian date)	13.0	Adequate content to reach a minimum acidity of 0.5
<i>Theobroma cacao</i> L.	Cocoa pulp	14.0	50.0
<i>Theobromagrandiflorum</i> L.	“Cupuaçu”	9.0	35.0
<i>Vacciniummacrocarpon</i> Aiton <i>Vacciniumoxycoccus</i> L.	Cranberry	7.5	30.0
<i>Vacciniummyrtillus</i> L. <i>Vacciniumcorymbosum</i> L. <i>Vacciniumangustifolium</i>	Bilberry/Blueberry	10.0	40.0
<i>Vacciniumvitis-idaea</i> L.	Lingonberry	10.0	25.0
<i>VitisVinifera</i> L. or hybrids thereof <i>VitisLabrusca</i> or hybrids thereof	Grape	16.0	50.0
	<u>Other</u> : High acidity		Adequate content to reach a minimum acidity of 0.5
	<u>Other</u> : High pulp content, or Strong flavour		25.0
	<u>Other</u> : Low acidity, Low pulp content, or Low/medium flavour		50.0