
Fruit Juice drink - Specification

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).

In the preparation of this Ethiopian Standard references has been made to the following.

Ugandan standard, DUS 62:201 fruit juice drinks specification.

KS EAS 77-1, Soft fruit juices – Specification Part1: Soft drinks and fruit juices, Kenyan Standard.

CODEXSTAN148-1985, Codex standard for guava nectar preserved exclusively by physical means (world – wide standard).

CODEX Stan 192, General standard for food additives.

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

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

United States Department of Agriculture (USDA), Commodity Specification Bottled juices.

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

Fruit Juice drink – Specification

1. Scope

This Ethiopian Standard specifies the requirements for fruit juice drink preserved exclusively by physical means¹.

¹ For the purpose of this Ethiopian standard preservation by physical means does not include ionizing radiation.

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 58, Drinking water (other than any packaged water) - Specification.

CES 73, General standard for prepackaged foods - Labeling.

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

ES ISO 750, Fruits and vegetables products - Determination of titratable acidity.

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

hydride generation 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

fruit

edible part of the plant that contains the seeds.

3.2

fruit juice

liquid obtained from the edible part of sound, appropriately mature and fresh fruit or of fruit maintained in sound condition by suitable means.

3.3

fruit puree

smooth cream of liquidized or crushed fruit.

3.4

fruit pulp

edible portions of the fruit, mashed, or cut into pieces, but not reduced to a puree'.

3.5

one gas (carbonation) volume

amount of carbon dioxide the water volume absorbs at the standard atmospheric pressure at 15.6 °C.

3.6

carbonation

process of addition of carbon dioxide to fruit drinks to achieve the characteristics of the product at the specified temperature and pressure.

3.7

standardized fruit juice

juice made by blending single strength fruit juices to a standard or reference brix value.

3.8

single strength fruit juice

natural liquid obtained from fruit without any blending or modification.

3.9

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.

3.10**fruit puree**

any unfermented pulpy fruit juice product obtained by finely comminuting and sieving only the edible portion of fruit or the fruit as a whole after removal of the rind and seeds or pits or pips, and preserved in a permitted manner.

3.11**blended juice drink**

obtained by mixing two or more fruit juice pulp and purées from different kinds of fruit species.

3.12**food grade materials**

material that will safeguard the hygienic, safety, nutritional, technological, and organoleptic qualities of the product.

4. Product descriptions

Fruit juice drink is a manufactured beverage intended for human consumption which contains fruit juice, fruit pulp or other edible parts of the fruits. It may be made from a single or a mixture of two or more fruits. It may be sweetened with nutritive and/or non nutritive (intense) sweeteners with or without added carbon dioxide and other permitted food additives. These beverages may be clear, cloudy, or may contain particulate matter (e.g. fruit pieces, crushed pips, seeds and/or peel of the fruit).

5. Essential composition**5.1 Basic ingredient****5.1.1 Fruits**

Fruit juice drink shall be prepared from fruits picked at the proper stage of maturity. The fruits used shall be free from damage or contamination as to make it unfit for human consumption.

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 Other permitted ingredient**5.2.1 Sugars and honey**

One or more of the sugars as defined in Ethiopian standards shall be added. Sugar, in the form of sugar, honey or both sugar and honey, may be added to a product. Honey, as defined in ES 1202, may be used if it is the sole added sweetening agent.

5.2.2 Lemon juice or lime juice

Lemon juice or lime juice may be added for acidification purpose in unsweetened fruit juice drinks.

5.2.3 Honey and fruit sugars

Sugars derived from fruits and/or honey may be added to fruit juice drinks.

5.2.4 Citrus reticulata juice

The juice from Citrus reticulata and/or hybrids with reticulata may be added to orange juice drink and shall be 10% max.

5.2.5 Salt, spices and aromatic herbs

Salt and spices and aromatic herbs (and their natural extracts) may be added to tomato juice drink.

5.2.6 Nutrients

For the purposes of product fortification, essential nutrients such as vitamins and minerals may be added to fruit juice drinks. Such additions shall comply with national legislation established for this purpose.

6. Requirements

6.1 General requirement

6.1.1 Organoleptic properties

- a) The product shall have the characteristic colour, aroma and flavour of the fruits, taking into consideration the addition of honey in substitution for sugars.
- b) Fruit juice drinks shall possess a good body, uniform colour and a well-balanced flavour.
- c) Fruit juice drinks shall be free from off-odours and off-flavours when assessed using the normal sensory tests.
- d) Fruit juice drinks shall be free from filth (impurities of animal origin, including dead insects) when assessed using the normal senses.
- e) Fruit juice drinks shall be practically free from objectionable matter.
- f) The appearance and consistency of the fruit juice drinks shall be uniform and characteristic of the product.
- g) Clear fruit juice drinks shall be of sparkling clarity and shall remain so when stored under normal storage conditions.
- h) Fruit juice drinks shall show no turbidity (except turbidity arising from the ingredients).
- i) Fruit juice drinks shall show no sedimentation (except sedimentation arising from the ingredients).

6.2 Specific requirements

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

Table 1 - Compositional requirement of fruit juice drinks

Characteristics	Requirement	Test Methods
Single strength fruit ingredient or the equivalent from concentrated fruit ingredient, % m/m, Min.	25	AOAC 920.151
Brix, (% v/v) at 20 °C, Min.	20	ES ISO 2172 ES ISO 2173
Ethanol, mg/kg. Max.	3	ES ISO 2448
pH	3.2 - 4.0	ES ISO 1842
Titration acids, total	0.2 to 0.5	ES ISO 750

7. Food additives

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

7.2 Salt and spices and aromatic herbs (and their natural extracts) may be added to tomato juice drink.

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
Tin(as Sn)	250	ES ISO 2447
Zinc (as Zn)	5	ES ISO 6636-2
Lead (as Pb)	0.05	ES ISO 6633
Arsenic (as As)	0.2	ES ISO 17239
Copper (as Cu)	5	ES ISO 7952
Iron (as Fe)	15	ES ISO 9526
Mercury(as Hg)	0.05	ES ISO 6637

NOTE: The sum of copper, iron and zinc shall not be more than 20 mg/kg.

9. Hygiene

9.1 Fruit juice drinks shall be manufactured and handled in a hygienic manner in accordance with ES 577, ES 929 and ES ISO 22002-1.

9.2 Fruit juice drinks shall be free of pathogenic microorganisms and shall conform to the microbiological requirements in Table 3 below.

Table 3 - Microbiological limits for fruit juice drinks

Characteristic	Limits	Test method
Total plate count, cfu/ml, Max.	50	ES ISO 4833-1
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
Eschericia coli, per 100 mL.	Absent	ES ISO 7251

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 the product:

- The name of the product shall be “----- juice drink” or “----- fruit juice drink”, where “-----” shall be replaced with the common name of the fruit(s) from which the drink is made.
- Where the product has been sweetened exclusively with non-nutritive sweeteners, the words “contains non-nutritive sweeteners” or “sweetened with non-nutritive sweeteners” shall appear in close proximity to the name of the product followed by an indication of the quantity of non-nutritive sweeteners added.
- If one or more juices in the fruit juice drink is made from concentrate (concentrated juice), this fact shall be declared in close proximity to the name of the product as follows: “-----” juice drink made from concentrate or “----- juice drink made from concentrated ----- juice”, where ----- shall be replaced with the name of the fruit from which the juice is obtained.
- Where the drink contains more than one gas volume of carbon dioxide the term carbonated shall appear in close proximity to name of the product.
- Where two or more fruits, except where lemon juice is used as an acidifying agent, are used to produce the drink, the product names shall be supplemented by a list of the fruits used, in descending order of the volume of the fruit juices or purées included. However, in the case of products manufactured from three or more fruits, the indication of the fruits used may be replaced by the words ‘several fruits’ or a similar wording, or by the number of fruits used.
- Where nutrients have been added to the fruit juice drink that information shall appear in close proximity to the product name, standing out well from any background, in clearly visible characters.
- Where the fruit juice drink contains particulate matter such as fruit pieces, crushed pips, seeds, peels, cells this information shall be declared on the label.

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.

The following designations shall be used where applicable:

- No fruit or fruit nectar may be represented pictorially on the label except guavas or guava juice.
- When the product contains honey, the declaration “contains honey” shall be in close proximity to the name of the product.

11. Method of sampling

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

Annex A

(normative)

Degree Brix of commonly used fruit juices in Ethiopia

Name of the fruit	Brix level as expressed from the fruit, °Brix
Orange	10.0
Passion fruit	12.0
Grape fruit	10.0
Lime	8.0
Lemon	8.0
Tomato	5.0
Mango	13.5
Guava	8.5
Apple	10.0
Apricot	13.0
Papaya	10.2
Pineapple	10.0
Tamarind	13.0
Tangerine	11.8
Bananas	18.0

Bibliography

AOAC 920.151, Solids (total) in fruits and fruit products.

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Organization and Objectives

The Ethiopian Standards Agency (ESA) is the national standards body of Ethiopia established in 2010 based on regulation No. 193/2010. ESA is established due to the restructuring of Quality and Standards Authority of Ethiopia (QSAE) which was established in 1998.

ESA's objectives are:-

- ❖ Develop Ethiopian standards and establish a system that enable to check whether goods and services 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.

Ethiopian Standards

The Ethiopian Standards are developed by national technical committees which are composed of different stakeholders consisting of educational institutions, research institutes, government organizations, certification, inspection, and testing organizations, regulatory bodies, consumer association etc. The requirements and/or recommendations contained in Ethiopian Standards are consensus based that reflects the interest of the TC representatives and also of comments received from the public and other sources. Ethiopian Standards are approved by the National Standardization Council and are kept under continuous review after publication and updated regularly to take account of latest scientific and technological changes.

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ESA, representing Ethiopia, is a member of the International Organization for Standardization (ISO), and Codex Alimentarius Commission (CODEX). It also maintains close working relations with the international Electro-technical Commission (IEC) and American Society for Testing and Materials (ASTM). It is a founding member of the African Regional Organization for standardization (ARSO).

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