ETHIOPIAN STANDARD

ES 6712:2021

First edition
xx-xx-2021

Fruit drinks - Specification

ICS: 67.080.10
Published by Ethiopian Standards Agency

Foreword

This Ethiopian Standard has been prepared under the direction of the Technical committee for fruit and vegetable (TC-13) and published by Ethiopian Standard 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:

FDEAS 948, Fruit drinks — Specification, East African Standardization.

Codex Stan 192, *General standard for food additives.*

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

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

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

Fruit drinks — Specification

1. Scope

This Ethiopian Standard specifies the requirements and methods of sampling and test for fruit drinks either as ready to drink or dillutables containing fruit juice.

This standard does not apply to the following categories of products for which other standards apply:

- fruit juices and nectars;
- vegetable juices and nectars.

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

ES 929, Code of practice-food hygiene management.

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

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

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

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 ^{0}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 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, Fruits, vegetables and derived products - Determination of copper content - Method using 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

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 pulp

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

3.4

one gas (carbonation) volume

amount of carbon dioxide the water volume absorbs at the standard atmospheric pressure at 15.6 ^{0}C.

3.5

carbonation

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

3.6

standardized fruit juice

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

3.7

single strength fruit juice

natural liquid obtained from fruit without any blending or modification.

3.8

brix

percent of soluble solids content of a liquid as determined by a refractometer calibrated at 20 ^{0}C and read as degrees Brix' on the International Sucrose Scale.

3.9

ready-to-drink

fruit drink is of a single strength or that the fruit drink which had been concentrated into a solid or liquid form, has been reconstituted or diluted according to the instructions on the container and may contain the following;

a) Acidity regulator;
b) Permitted food conditioner
c) Permitted flavouring substances;
d) Permitted preservatives;

e) Permitted colouring substances;

f) Permitted nutrient supplement like vitamin C;

g) Salt; and

h) Permitted sweeteners.

3.10

dilutables

fruit drinks that require dilution to taste by consumers.

3.11

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.

3.12

blended fruit drink

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

3.13

food grade materials

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

4. Product description

4.1 Fruit drink (ready to drink) is a manufactured beverage intended for direct 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 either nutritive 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 (for example, fruit pieces, crushed pips, seeds and/or peel of the fruit).

4.1.1 Fruit Cordial - means a syrup concentrated drink which has to be diluted to a minimum ration of one to three, to produce a suitable drink after dilution. The product is obtained by blending clarified fruit juice with either nutritive or non-nutritive (intense) sweeteners, water, with or without salt and peel oil and any other ingredients suitable to the product.

4.1.2 Fruit squash - means cordial, containing after dilution in a minimum of one to three fruit juice at standard strength. It is made from fruit juice, nutritive or non-nutritive (intense) sweeteners, water, and diluted sugar syrup. Squashes may also contain food colouring and additional flavouring.

4.1.3 Fruit Crush - drinks obtained by squeezing/crushing fruits without further straining.

5. Ingredients

5.1 Fruits

Fruit 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 them unfit for human consumption.

5.2 Sweetening agents

a) Honey (as defined in ES 1202), sucrose, glucose (dextrose anhydrous) or fructose (as defined in the Ethiopian Standard for Sugars), and other nutritive sweeteners or non- nutritive sweeteners may be added.

b) Syrups (as defined in the Ethiopian Standard for Sugars), liquid sucrose, invert sugar solution, invert sugar syrup, fructose syrup, liquid cane sugar, isoglucose and high fructose syrup may be added only to fruit drinks from concentrate'.

5.3 Water

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

5.4 Fortification

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

6. Requirements

6.1 General requirements

Fruit drinks shall:

a) have the essential physical, chemical, nutritional characteristics, colour, aroma and flavour of juice from the same kind of fruits from which it is made.

b) have a uniform appearance and consistency and characteristic of the product.

c) have not undergone any kind of deterioration or spoilage.

d) be clean and free from foreign matter.

Clear fruit drinks shall remain so when stored under normal storage conditions.

6.2 Specific requirements

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

Table 1 - Compositional requirement of fruit drinks

Characteristic	Requirement	Test Methods
Ethanol content, %, Max.	0.3	ES ISO 2448
Acid insoluble ash, %, Max.	0.02	ES ISO 763
Min. (%) of fruit juice/fruit puree in the final product; Ready to drink (RTD) Fruit Squash (in the undiluted form) Fruit Crush Fruit Cordial	 10 24 24 24	GMP
Total soluble solids, Min. (%) Ready to drink (RTD) Fruit Squash (in the undiluted form) Fruit Crush Fruit Cordial	 10 40 55 30	ES ISO 2172 ES ISO 2173
pH (Min.)	2.5	ES ISO 1842
Co_2	Not less than one volume	Annex A
For the carbonated fruit drinks the volume of carbon dioxide shall be not less than one.		

7. Food additives

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

7.2 For tomato drink, Salt, spices and aromatic herbs may be used.

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

Table 2 - Metal contaminants

Contaminants	Limit (mg/kg, Max.)	Test Methods
Arsenic (as As)	0.2	ES ISO 17239
Copper (as Cu)	1.5	ES ISO 7952
Zinc (as Zn)	5	ES ISO 6636-2
Lead (as Pb)	0.03	ES ISO 6633

9. Hygiene

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

Table 3 - Microbiological limits for fruit drinks

Characteristic	Limits	Test methods
Total plate count, cfu/g, Max.	100	ES ISO 4833-1
Total coliforms, per 100 mL.	Absent	ES ISO 4832
E. coli, per 100 mL.	Absent	ES ISO 7251
Yeast and moulds, cfu/g, Max.	10	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 1 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"--- drink" or "--- fruit drink", or "--- squash", or "--- cordial '' or --- crush, "---" shall be replaced with the common name of the fruit(s) from which the drink is made.

- In the case of fruit drink products manufactured from two or more fruits, the product name shall include the names of the fruit drinks comprising the mixture in descending order of proportion by weight (m/m) or the words "fruit drink blend", " a fruit drink mixture", "mixed fruit drink" or other similar wording.

In case of fruit squash, cordial or crush the word “drink” shall be substituted respectively.

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:

i. 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;

ii. where the drink contains more than one gas volume of carbon dioxide, the term carbonated /sparkling shall appear in the name of the product.

11. Method of sampling

Sampling of mango puree and mango concentrate puree shall be done in accordance with ES 2834.

Annex A

Method of measuring gas volume

Principle

The method involves snifting of the top gas. The pressure reading should drop to 2 psi, to remove the air before testing for carbon dioxide volume. In so doing correction of altitude as per table should be considered as pressure is affected by altitude.

The apparatus consists of pressure gauge having a hollow spike with holes in its side. The bottle is inserted from the side into the slot provided in the neck of the carbon dioxide tester and is secured in place by tightening with a threaded system. The pressure gauge is inserted until the needle point touches the crown cork. There is a snift valve on the gauge stem which is kept closed until the needle point of the pressure gauge is forced through the crown cork. The reading is noted on the gauge.

Procedure

Clamp the bottle in the frame of the gas volume tester. Pierce the crown cork but do not shake the bottle. Snift off the top gas quickly until the gauge reading drops to zero. Make certain to close the valve instantly the needle touches zero in the pressure gauge. Shake the bottle vigorously until the gauge gives the reading that additional shaking does not change. Record the pressure. Note the temperature and record. Obtain the volume of gas from pressure-temperature chart (Carbon dioxide chart).

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US 62, Fruit drinks specification

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Ethiopian Standards Agency

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 incompliance 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 or ganizations, 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.
Orders For all Ethiopian Standards, International Standard and ASTM standards, including electronic versions, should be addressed to the Documentation and Publication Team at the Head office and Branch (Liaisons) offices. A catalogue of Ethiopian Standards is also a vailable freely and can be accessed in from our website.

International Involvement

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 in ternational 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).

<u>More Information</u>?
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