Foreword

This Bangladesh Standard was adopted by the Bangladesh Standards and Testing Institution on ……, after the draft finalized by the Fruits, Vegetables and their Derived Products Sectional Committee had been approved by the Agricultural and Food Products Divisional Committee.

Fruit drinks refer to beverages prepared from the edible portion of suitable fruits, their pulps, juices, or concentrates, optionally blended with water, nutritive sweeteners, acids, flavorings, and other permitted ingredients to impart characteristic taste, colour, and aroma. Fruit drinks are widely consumed in Bangladesh as ready-to-serve beverages and constitute an important segment of the non-alcoholic beverage sector. In view of their increasing production and consumption, revision of this standard became necessary to ensure compliance with updated quality and safety requirements, safeguard consumer health, and promote fair trade practices.

This standard 'BDS 1581 Fruit Drinks' was first published in 1997, subsequently revised in 2011 and 2015. The present edition represents the third revision of the standard. Major modifications introduced in this revision are as follows:

i) the definition for 'fruit drinks' has been elaborated;
ii) the list of permitted ingredients has been reviewed and updated;
iii) new clause for 'legal requirements' has been incorporated;
iv) limits for 'preservatives' have been updated;
v) microbiological limits for '*Salmonella'* and '*Listeria monocytogenes'* have been included; and
vi) requirements for labeling have been modified according to the current practices.

The present standard specifies the quality and safety requirements for fruit drinks to ensure uniformity and consistency of the product. The committee recognized the need to identify a test method for determination of fruit content. However, in view of the non-availability of a suitable test method, manufacturers shall maintain documented records indicating the quantity of fruit ingredient added to each batch.

The Sectional Committee responsible for the preparation of this standard has taken into consideration the views of the members of this committee, local producers, consumers and technologists and has related the standard to the manufacturing and trade practices followed in the country in this field.

In the formulation of this standard, considerable assistance has been derived from the following publications, which are acknowledged with thanks:

SLS 729:2010 Specification for Ready-to-Serve Fruit Drinks (First Revision)
Sri Lanka Standards Institution and
CXS 247:2005 Standard for Fruit Juices and Nectars (Latest amendment 2024)
Codex Alimentarius Commission

This standard will subject to periodic review and amendments, if necessary, in order to keep pace with the latest industrial and technological innovations. Any suggestions for improvement will be recorded and placed before the committee in due course.

For the purpose of deciding, whether a particular requirement of this standard is complied with the final value observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with BDS 103. The number of significant places retained in the rounded off value should be the same as that of the specified value in the standard.

This standard, BDS 1581:YYYY Fruit Drinks (Third Revision), cancels and replaces BDS 1581:2015 Fruit Drinks (Second Revision), which has been technically revised.

Bangladesh Standard
Specification For
Fruit Drinks
(*Third Revision*)

1. Scope

1.1 This specification prescribes the requirements and methods of sampling and testing for fruit drinks, carbonated or non-carbonated, intended for direct consumption without dilution.

1.2 This specification does not cover fruit juices and fruit nectars intended for direct consumption without dilution.

1.3 This specification does not cover artificial/flavoured beverages intended for direct consumption without dilution.

2. Normative References

2.1 The relevant standards listed in Annex-A are necessary adjuncts to this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

3. Definition

For the purpose of this specification, the following definition shall apply:

3.1 Fruit drink: A fruit drink is intended for direct consumption without dilution, prepared from unfermented but fermentable fruit juice, puree or concentrate with or without pulp, and containing potable water and any permitted soluble sweetener. The product shall be processed by heat in an appropriate manner before or after being sealed in a container. Aromatic substances, volatile flavour/aroma components, pulp and cells* — all of which shall be recovered from the same kind of fruit and obtained by suitable physical means — may be added. A single fruit drink is obtained from one kind of fruit. A mixed fruit drink is obtained by blending two or more juices or juices and purees derived from different kinds of fruits, with or without its original solids.

NOTE - *For citrus fruits, pulp or cells are the juice sacs obtained from the endocarp.

4. Ingredients

4.1 Basic ingredients

4.1.1 Fruit ingredient

The fruit ingredient shall be fruit juice/puree/pulp/concentrate which is free from seeds and peel (except strawberry). It shall be obtained from fruits which are wholesome, clean and of suitable ripeness. The fruits shall be free from any sign of fermentation.

4.1.2 Potable Water

4.1.3 Sweeteners

4.1.3.1 Sugars

Refined Sugar conforming to BDS 138
Sugars conforming to BDS CXS 212

4.1.3.2 Non-nutritive sweeteners only for products which are labeled as "energy reduced" or "with no added sugar".

Aspartame, *Max.*	- 600 mg/kg
Acesulfame – potassium, *Max.*	- 350 mg/kg
Sucralose, *Max.*	- 300 mg/kg
Steviol Glycosides, *Max.*	- 200 mg/kg

NOTE– When more than one non-nutritive sweetener is used, the amount of each shall be such that, when expressed as a percentage of the amount permitted singly, the sum of these percentages does not exceed one hundred percent.

4.2 Optional ingredients

In addition to the ingredients specified in Section 4.1, one or more of the following ingredients may be used.

4.2.1 Fruit pieces, fruit halves, fruit sacs (Citrus fruits), fruit chunks, fruit strips, fruit bits, fruit pearls, Nata deco, Basil seeds, Chia seeds, Sagu dana, Aloe Vera (inner gel), and popping booba .

4.2.2 Syrups – liquid glucose, invert sugar syrup, fructose syrup, liquid cane sugar, isoglucose, high fructose syrup, honey conforming to BDS 1039 and treacle.

4.2.3 Ascorbic acid

4.2.4 Acidity regulators – Citric acid, tartaric acid, malic acid, fumaric acid, lactic acid and their sodium, potassium and calcium salts, as permitted under the relevant food category in the latest version of the Codex General Standard for Food Additives (CXS 192).

4.2.5 Colours – as permitted under the relevant food category in the latest version of CXS 192.

4.2.6 Emulsifying or stabilizing agents – as permitted under the relevant food category in the latest version of CXS 192.

4.2.7 Flavouring substances – Natural, nature-identical, or artificial flavouring substances may be used; however, their use shall be declared on the label.

4.2.8 Edible salt, conforming to BDS 1236 or BDS CXS 150.

4.2.9 Food Preservatives – The product may contain only the following preservatives when tested according to the given methods in the table 1.

Table 1 Limit for Preservatives

Sl.No.	Preservatives	Limit	Method of test
(1)	(2)	(3)	(4)
i.	Benzoic acid and/or its salts (as Benzoic acid), mg/kg, *Max.*	250	BDS ISO 22855
ii.	Sorbic acid and/or its salts (as Sorbic acid), mg/kg, *Max.*	500	BDS ISO 22855
iii.	Sulphur dioxide, Sulphites and/or its salts (as Sulphur dioxide), mg/kg, *Max.*	70	BDS ISO 5523

NOTE –
1) When more than one preservative is used, the amount of each shall be such that, when expressed as a percentage of the amount permitted singly, the sum of these percentages does not exceed one hundred percent.
2) Canned products shall not contain Sulphur dioxide.

4.2.10 Carbon dioxide, purity not less than 99 percent.

4.2.11 Dairy Milk solids - Only for wood apple drink.

5 Requirements

5.1 The fruit drink shall contain **a minimum of 10% fruit content** derived from the fruit species declared on the label.

5.2 Hygiene – During processing, handling, storage and transportation, effective measures must be taken to prevent cross contamination with chemicals, microbial or physical contaminants.

5.2.1 The product shall be processed and packed under strict hygienic conditions in premises maintained in accordance with BDS 822.

5.3 Appearance – The product shall be of a uniform consistency and of a characteristic colour of juice from the same kind of fruit from which it is made and shall be free from any discolouration. It shall be free from pips, seeds, peel and other extraneous matter, but some parts or components of pips, seeds and peel, which cannot be removed by Good Manufacturing practices, may be acceptable. For citrus fruits, juice sacs from the same kind of fruit may be present.

5.4 Flavour and Aroma – The product shall have a pleasant flavour and aroma characteristic of the juice from the same kind of fruit from which it is made. It shall be free from scorching, caramelization and fermentation.

5.5 Specific requirements – The product shall comply with the requirements given in Table 2, when tested according to the methods given in Column 4 of the Table 2.

Table 2 Requirements for Fruit Drinks

Sl. No.	Characteristics	Requirement	Method of Test
(1)	(2)	(3)	(4)
i)	Total soluble solids content, percent by mass, *Max.*	16	Annex B
ii)	Acidity (as anhydrous citric acid), percent by mass, *Max.*	1.0	Annex C

5.6 Microbiological limits – The product shall comply with the limits given in Table 3, when tested according to the methods given in Column 4 of the Table 3.

Table 3 Microbiological Limits

Sl. No.	Characteristics	Limit	Method Of Test
(1)	(2)	(3)	(4)
i)	Total plate count, cfu/ml	100	BDS ISO 4833-1
ii)	Yeasts and moulds count, cfu/ml	<10	BDS ISO 21527-1
iii)	Total coliform count, cfu/ml	Absent	BDS ISO 4831
iv)	*Salmonella,* cfu/25 ml	Absent	BDS ISO 6579-1
v)	*Listeria monocytogenes,* cfu/*25* ml	Absent	BDS ISO 1129O-1

5.7 Contaminants

5.7.1 Pesticide residues – The product shall be prepared with special care under Good Manufacturing Practices (GMP) so that residues of pesticides used in the production, storage or processing of raw materials or the finished food ingredient do not remain, or, if technically unavoidable, are reduced to the maximum extent possible. The product covered by this standard shall comply with the maximum residue limits for pesticides established by the Codex Alimentarius Commission.

5.7.2 Heavy metals – The product shall not exceed the limits for heavy metals given in Table 4, when tested according to the methods given in Column 4 of the Table 4.

Table 4 – Limits For Heavy Metals

Sl No.	Characteristics	Limit	Method of Test
(1)	(2)	(3)	(4)
i)	Arsenic (as As), mg/kg, Max.	0.1	AOAC 986.15
ii)	Cadmium (as Cd), mg/kg, Max.	1.0	AOAC 999.11
iii)	Lead (as Pb), mg/kg, Max.	0.5	AOAC 999.11
iv)	Tin (as Sn), mg/kg, Max.	40*	AOAC 999.11
NOTE - * For canned products 150 mg/kg, *Max.*			

5.8 Legal Requirement – The product shall, in all other aspects comply with the requirements of the legislations enforced in the country.

6. Packing and Marking

6.1 Packing – The product shall be packaged in food grade sterilized sanitary cans, glass containers, polyethylene bags, laminate paper (tetra or combi – 6-layer laminate paper) under strict hygienic conditions and the containers shall be sealed air-tight, products packaged in metal containers shall not contain sulphur dioxide. The containers shall be capable of withstanding the temperatures involved in processing.

6.2 Marking – The following shall be marked or labeled legibly and indelibly on each container destined for the final consumer.

a) Name of the product as "X - fruit drink" or "X" - drink", where X denotes the common name of the fruit used for making the product. In the case of products manufactured from two or more fruits, the product name shall include the names of the fruit ingredient comprising the mixture in descending order of proportion by mass (m/m) or the words, "mixed fruit drink".

b) Brand name or trade mark, if any;
c) Net volume, in millilitres or litres;
d) Any permitted food additive's class and name or INS number;
e) Instructions for storage and use, if any;
f) Name and address of the manufacturer, packer or distributor in Bangladesh;
g) Batch number or code number or a decipherable code marking;
h) Date of manufacture;
i) Date of expiry (for imported products, the remaining expiry date shall not be less than two-thirds of the original period);
j) Complete list of ingredients shall be declared in descending order of their proportions. Fruit pieces, fruit components, seeds, gels, or other added inclusions shall be declared by their specific name in the list of ingredients. Pulp and cells (for citrus fruits juice sacs) added to the product in excess of that normally contained in the fruit shall be declared accordingly.
k) Country of origin, in case imported products;
l) Maximum retail price;
m) Any pictorial representation of fruit(s) on the label shall not mislead the consumer with respect to the nature of the fruit so illustrated;
n) When non-nutritive sweeteners are added as substitutes for sugars, the label shall bear the statement 'with non-nutritive sweetener(s)' and either 'energy reduced' or 'with no added sugar', as applicable, in conjunction with or in close proximity to the product name;
o) Where the product contains added carbon dioxide, the term 'carbonated' or 'sparkling' shall appear on the label in close proximity to the name of the product; and
p) Any other requirements as specified under the 'Packaged Commodities Rules, 2021 (Amendment-2025)' of BSTI.

6.2.1 The container may also be marked with the BSTI Certification Mark.

NOTE: The use of BSTI Certification Mark is governed by the provisions of Bangladesh Standards and Testing Institution Act 2018 and the Rules and Regulations made thereunder. Details of conditions under which a license for the use of BSTI Certification Mark may be granted to the manufacturers or processors may be obtained from Bangladesh Standards and Testing Institution.

7 Sampling – Representative samples of the product for ascertaining conformity to the requirements of this standard shall be drawn as prescribed in Annex D.

8 Tests – The tests shall be carried out in accordance with the relevant clauses and the methods specified in Column 4 of Tables 1, 2, 3 and 4.

9 Criteria for Conformity

A lot shall be declared as conforming to the requirements of this specification if the following conditions are satisfied:

9.1 Each container examined as in **D.5.1** satisfies the packing and marking requirements.

10.2 Each container tested as in **D.5.2** satisfies the microbiological requirements given in clause **5.6**.

10.3 Each container tested as in **D.5.3** satisfies the requirements given in clause **5.2** and clause **5.3**.

10.4 The composite sample tested as in **D.5.4** satisfies the requirements given in clause **5.5** and sub-clause **5.7.2**.

Annex – A
(*Clause 2.1*)
List of Relevant Bangladesh Standards

BDS No.	Title
BDS 103	Methods of rounding off numerical value
BDS 138	Refined sugar
BDS 822	Code of hygienic conditions for food processing units
BDS 1236	Iodized salt
BDS 1039	Honey
BDS CXS 212	Sugars
BDS CXS 150	Food Grade Salt
BDS CXS 192	General Standard for Food Additives
BDS ISO 4831	Microbiology of food and animal feeding stuffs- Horizontal method for the detection of and enumeration of coliforms - Most probable number technique
BDS ISO 4833-1	Microbiology of food chain – Horizontal method for the enumeration of microorganism – Part 1: Colony count at 30ºC by the pour plate technique
BDS ISO 5523	Liquid fruit and vegetable products – Determination of sulphur dioxide content (Routine method)
BDS ISO 6579-1	Microbiology of the food chain - Horizontal method for the detection, enumeration and serotyping of *Salmonella* – Part 1: Detection of. *Salmonella* spp.
BDS ISO 11290-1	Microbiology of the food chain – Horizontal method for the detection and enumeration of *Listeria monocytogens* and of *Listeria spp.* – Part 1: Detection method
BDS 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.
BDS ISO 22855	Fruit and vegetable products - Determination of benzoic acid and sorbic acid concentrations - High performance liquid chromatography method

Annex B
Determination of Soluble Solids Content
(Exclusive of Salt)

[*Table 2, Item (i)*]

B.0 General

B.0.1 The total soluble solids are determined by subtracting the percent by mass of insoluble solids from percent by mass of total solids.

B.1 Determination of Total Solids

B.1.1 Apparatus

B.1.1.1 Flat-bottom dishes

B.1.1.2 Vacuum Oven

B.1.2 Procedure – Weigh accurately into a large flat bottom dish a portion of sample of so such size sample that the dry residue will not be less than 3 to 4 g of dry material. Distribute thinly in an even layer oven bottom of dish, diluting with water if necessary to facilitate distribution. Dry at 70°C in a vacuum oven under pressure not exceeding 100 mm of mercury until consecutive weighings made at 2-hour intervals do not vary by more than 3 mg.

B.1.3 Calculation – From the loss in mass observed, calculate the percent by mass of total solids.

B.2 Determination of Insoluble Solids

B.2.1 Wash 20 g of sample repeatedly with hot water, centrifuging after each addition of water and pouring the clear, supernatant liquid through weighed filter or Buchner funnel. (The filter used is one of two such papers dried 2 hours at 100°C and weighed in a covered dish. The second paper is used, if necessary, when first paper becomes clogged). After 4 or 5 washings, transfer remaining insoluble matter to filter, dry in a covered dish for 2 hours at 100°C. Cool in desiccators and weigh.

B.2.2 Determination of Soluble Solids

B.2.2.1 The total soluble solids, per cent by mass will be the difference between per cent total solids less the percent insoluble solids.

B.2.3 Determination of Percentage of Soluble Solids

B.2.3.1 Percentage of total soluble solids (exclusive of salt) may then be estimated by subtracting the percentage of insoluble solids and salt present in the sample is 1.5 per cent of the value obtained for total soluble solids.

Annex C
Determination of Acidity
[*Table 2, Item (ii)]*

C.1 Reagents

C.1.1 Standard sodium hydroxide solution, approximately 0.1 mol/dm^3

C.1.2 Phenolphthalein indicator solution – Dissolve 0.5 g of phenolphthalein in 200 ml of 50 per cent ethyl alcohol by volume.

C.2 Procedure

Weigh, to the nearest milligram, about 10 g of the sample and transfer to a conical flask with 100 ml to 150 ml of recently boiled and cooled distilled water. Add 1 ml of the phenolphthalein indicator solution and titrate against the standard sodium hydroxide solution. For observing the colour change at the end point use another portion of the sample diluted the same proportion in a similar flask.

C.3 Calculation

$$\text{Acidity (as anhydrous citric acid), per cent by mass} = \frac{6.404\ V \times M}{m}$$

Where,

V is the volume, in ml, of standard sodium hydroxide required for titration;

M is the morality of the standard sodium hydroxide solution; and

m is the mass, in g, of the sample taken for the test.

Annex D
Sampling
(*Clause 7*)

D.1 Lot

In any consignment, all the containers of the same size and belonging to one batch of manufacture or supply shall constitute a lot.

D.2 General Requirements of Sampling

In drawing, preparing, sorting and handling samples, following precautions and directions shall be taken:

D.2.1 Samples shall be drawn in a protected place not exposed to damp air, dust or soot.

D.2.2 The sampling instruments shall be clean and dry when used. When drawing samples for microbiological examination, the sampling instruments shall be sterilized.

D.2.3 Samples shall be protected against adventitious contamination.

D.2.4 The samples shall be placed in clean and dry containers. The size of the sample containers shall be of such that they are almost completely filled by the sample. When drawing samples for microbiological examinations, the sample containers shall be sterilized.

D.2.5 The sample containers shall be sealed air-tight after filling and marked with the necessary details of sampling.

D.2.6 Sample shall be stored in such a manner that the temperature of the material does not vary unduly from the room temperature.

D.3 Scale of Sampling

D.3.1 Samples shall be tested from each lot for ascertaining its conformity to the requirements of this specification.

D3.2 The number of containers to be selected from a lot shall be in accordance with Column 2 of Table 4.

D.3.3 If the containers are packed in cases at least 10 per cent of the cases, subject to a minimum of two shall be selected. As far as possible an equal number of containers shall be drawn from each case so selected to from a sample as given in Table 4.

Table 5 – Scale of Sampling

Number of containers in the lot	Number of containers to be selected	Size of the sub sample for microbiological requirements
(1)	(2)	(3)
Up to 180	04	02
181 to 300	06	03
301 to 500	07	03
501 to 800	08	03
801 to 1300	11	04
1301 to 3200	14	04
3201 to 8000	20	05
8001 and above	25	05

D.3.4 The cases and containers shall be selected at random.

D.3.5 The containers selected shall be marked with necessary details of sampling.

D.4 Reference Sample

If a reference sample is required, the number of containers to be selected from a lot shall be three times the number given in Column 2 of Table 5 (see Note). The containers so selected shall be divided into three equal parts. One of these parts shall be marked for the purchaser, one for the supplier and the third for the referee.

NOTE – In case of microbiological requirements a reference sample is not required.

D.5 Number of Tests

D.5.1 Each container selected as in D.3.2 or D.3.3 shall be examined for packaging and marking requirements.

D.5.2 A sub-sample of size as given in Column 3 of Table 5 shall be selected at random from the containers selected as in D.3.2 or D.3.3 and tested for microbiological requirements given in 5.5.

D.5.3 Each of the remaining containers selected as in D.3.2 or D.3.3 shall be individually tested for the requirements given in clause 5.2 and clause 5.3.

D.5.4 After testing for requirements as stated in D.5.3 equal quantities of material shall be taken from each container and mixed together to form a composite sample. The composite sample thus obtained shall be tested for the requirements given in clause **5.5** and sub-clause **5.7.2**.

NOTE – Test for pesticide residues given in sub-clause 5.7.1 may not be necessary for routine analysis. This shall be carried out if requested.