Foreword

This Bangladesh standard was adopted by the Bangladesh Standards and Testing Institution on …….(To be inserted)……, after the draft finalized by the Soft Drinks and Beverages Sectional Committee had been approved by the Agricultural and Food Products Divisional Committee.

Electrolyte drinks (sports drinks) are electrolyte-enhanced beverages. The primarily reason for using electrolyte drinks (sports drinks) is to replenish electrolytes and fluids. Their main purpose is to restore water and electrolytes that are lost during heavy exercise and sweating. It will contain electrolytes like sodium, potassium, calcium and magnesium. Many are carbohydrate-based, with added sugars like fructose, glucose and sucrose etc.

Electrolyte drinks (sports drinks) are really intended for people doing a high level or strenuous physical activity. For most children and even adults, electrolyte drinks (sports drinks) aren't required to meet daily activity levels and it's best to consider electrolyte drinks (sports drinks) as a 'sometimes' drink rather than an 'every day' drink. The best way for a consumer to keep hydrated is to drink water.

This standard has been developed because the importation, local production and consumption of electrolyte drinks (sports drinks) by Bangladeshi is high and continues to rise, and thus there is need to regulate the industry and ensure quality and safety of the product so as to protect health and safety of the consumers.

This standard is subject to periodical reviews 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.

Bangladesh Standard
Specification For
Electrolyte Drinks (Sports Drinks)

1. Scope

1.1 This standard prescribes the requirements and the methods of sampling and test for electrolyte drinks (sports drinks).

1.2 This standard does not cover to energy drink.

2. References

2.1 The Bangladesh Standards listed in Annex–D is necessary adjuncts to this standard. For references, the latest edition of the referenced document (including any amendments) applies.

3. Terminology

3.1 Electrolyte drinks (sports drinks) – Electrolyte drinks (sports drinks) means a drink formulated and represented as suitable for the rapid replacement of fluid, carbohydrates, prescribed electrolytes (sodium, potassium, calcium, magnesium, chloride) and minerals.

3.2 Electrolyte drinks base (Sports drinks base) – Electrolyte drinks (sports drinks base) means a solid or liquid or powder which when made up, makes an electrolyte drink (sport drinks).

3.3 Claim – A claim is any representation which states, suggests or implies that a food has particular characteristics relating to its origin, nutritional properties, nature, production, processing, composition or any other quality. It does not include meaningless superlatives.

3.4 Food advertisement – Food advertisements are construed throughout this code in their broadest sense to embrace any, form of advertising or publicity relating to food. Therefore, it should include all material whether any notice, circular, invoice, or other document, and any public announcement made orally, virtually, electronically or by any means of producing or transmitting light or sound, written, printed, pictorial, spoken or film, which features a message promoting a food product, or a food practice.

3.5 Safe Quantity – The maximum amount that should not be exceeded in one day in accordance with the directions specified in the label.

3.6 Serving – A reasonable quantity of food/beverage suited for consumption, at one time by an individual from a specified group of population.

4. Ingredients

4.1 Essential ingredients – An electrolyte drinks (sports drinks) or electrolyte drinks base (sports drinks base) must contain:

(a) sodium 230 - 920 milligrams/L; and
(b) no less than 20 g/L and no more than 120 g/L in total of the following:
(i) dextrose;
(ii) fructose;
(iii) glucose syrup;
(iv) maltodextrin;
(v) sucrose; and
(c) no more than 50% of total carbohydrate as fructose

4.2 Optional ingredients – An electrolyte drinks (sports drinks) or electrolyte drink base (sports drinks base) may also contain in the following ingredient/s:

(a) calcium phosphates;
(b) potassium phosphates;
(c) calcium citrates;
(d) potassium citrates;
(e) sodium citrates;
(f) sodium carbonates, including sodium bicarbonate
(g) potassium carbonates, including potassium bicarbonate;
(h) potassium chloride;
(i) calcium chloride;
(j) sodium chloride;
(k) calcium lactate;
(l) magnesium lactate;
(m) magnesium sulphate

Note 1: (a) Potassium not more than 195 milligrams/l, if any;
(b) Bicarbonate not more than 793 milligrams/l, if any; and
(c) Citrate not more than 819 milligrams/l, if any

5. General Requirements

5.1 Description – Electrolyte drinks (sports drinks) should be free from impurities, separation and deposition. The product shall be free from foreign residues, moldy and fermentation odors, and other impurities. The product shall be free from any stimulants and hormones. Odour and taste inherent to the specific characteristics of such electrolyte drinks.

5.2 Hygienic condition – Electrolyte drinks (sports drinks) shall be manufactured in factories maintained under strict hygienic conditions in accordance with BDS 822.

5.3 The product shall not contain caffeine.

5.4 The product shall not contain any non-nutritive sweeteners.

5.5 Water to be used in electrolyte drinks production shall comply with relevant Bangladesh standards (BDS 1240).

5.6 The product should not be with added prohibited stimulants, hormones and forbidden substances in accordance with the latest version of forbidden substances issued by World Anti-Doping Agency (WADA).

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

5.8 Absence of ethanol – Electrolyte drinks (sports drinks) shall not contain added ethanol.

5.9 Prohibition on mixing – Electrolyte drinks (sports drinks) shall not be mixed with other non-alcoholic beverages.

5.10 Food additives – Electrolyte drinks (sports drinks) may contain any food additives as permitted under the food category 14.1.4 in the latest available version of Codex General Standard for Food additives (CODEX STAN 192).

5.11 Electrolyte drinks (sports drinks) shall also conform to the requirements given in Table-1.

Table-1 Requirements for Electrolyte drinks (sports drinks)

Sl. No.	Characteristics	Limit	Method of test ref. to
(1)	(2)	(3)	(4)
i)	Arsenic (As), mg/kg, *Max*.	0.1	AOAC 986.15 F, 2005
ii)	Lead (Pb), mg/kg, *Max*.	0.02	AOAC Method 974.27, 2005
iii)	Total plate count, per ml, *Max*.	50	BDS ISO 6222
iv)	Yeast and mould count, per ml, *Max*.	<10 cfu	Annex B
v)	Coliform count, in 100 ml	Absent	Annex C
vi)	*Salmonella, per ml*	Absent	BDS ISO 19250
vii)	*E. coli, per ml*	Absent	BDS ISO 9308-2

6. Packing, marking, labelling, storage and display

6.1 Container – The electrolyte drinks (sports drinks) shall be filled in a food grade container. All containers in which electrolyte drinks (sports drinks) are packed shall be cleaned and sanitized. The containers shall be filled under strict sanitary conditions. After filling, the containers shall be hermetically sealed with clean new crown corks and/or plastic closure as appropriate.

6.2 Packing – All information in the label shall be readable form of normal eye vision, clear with contrast colour, neat and pasted securely. The following information shall appear legibly and indelibly on each container or crown or label:

a) Name of the product "Electrolyte drinks (sports drinks)" with brand name, if any;
b) Batch or code number;
c) Name and address of the manufacturer/importer;
d) Net content in ml;
e) A declaration on safe quantity servings per day shall be made on the label;
f) List of the used ingredients with INS number;
g) Date of manufacture;
h) Date of expiry;
i) Maximum Retail Price;
j) Any other requirements as specified under the Bangladesh standards of weights and measures (packaged commodities) Rules, 2021

6.3 The following advisory statement shall also be included on the label of electrolyte drinks (sports drinks):

Advisory statement (in bold font): Not suitable for kidney patient and/or hypertension patient and/or diabetic patient and child below 14 years age.

6.4 Store and display – The product shall be stored away from moisture, direct sunlight and sources of contamination and undesirable odors. Electrolyte drinks (sports drinks) shall be displayed in dedicated display spaces, shelves or refrigerators and separated from other beverages and drink products in retail shops that sell directly to consumers.

6.5 Prohibition Claim – No food advertisement shall indicate either directly or indirectly that the food has tonic, restorative or medicinal properties or properties which make it beneficial for invalids or which will cure, alleviate or prevent disease. No claims purporting to be statements of fact should be made if they are likely misleading to the consumers.

6.6 Prohibition labelling – In absence of certain fruit pulp/concentrate, the use of picture of fruit in any form of label on container/packet of electrolyte drinks (sports drinks) to attract the consumer is strictly prohibited.

6.6 Ethical advertisements – All food advertising communications should be prepared with a due sense of social and professional responsibility and should conform to the principles of fair competition, as generally accepted in business.

7. Marking

7.1 Where there is a label, the container label shall be marked with the BSTI Certification Mark.

7.1.1 Where there is no label, the container containing crown/closure shall be marked with BSTI Certification Mark on crown/closure.

Note-2: 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.

8. Sampling

8.1 Representative samples of the material shall be drawn as prescribed in Annex-A

9. Tests

9.1 Tests shall be carried out according to section 4, section 5, Table 1 of this standard and as prescribed in the appropriate annexure specified in the clauses.

9.2 Quality of reagents – Unless otherwise specified, pure chemicals shall be employed in tests and distilled water (see BDS 833) shall be used wherever the water as a reagent is intended.

Note-3: Pure chemicals shall mean chemicals that do not contain impurities, which may affect the result of analysis.

Annex-A
(Sub-clause 8.1)
Sampling of electrolyte drinks (sports drinks)

A-1 Scale of Sampling

A-1.1 Lot – All bottles in a consignment belonging to the same batch of manufacture shall constitute a lot. If the consignment is declared to consist of different batches of manufacture, bottles of the same batch shall be grouped together and each group so formed shall constitute a separate lot.

A-1.1.1 Samples shall be tested from each lot for ascertaining conforming to the requirements of the standard.

A-1.2 The number of bottles to be selected from a lot for testing for the microbiological and other requirements shall depend on the size of the lot and shall be in accordance with Table – 2.

Table-2 Number of Bottles to be Selected for Sampling
(Clause A-1.2)

No. of bottles in the lot	No. of bottles to be selected for	
	Microbiological Tests	Other Tests
(1)	(2)	(3)
Up to 1300	12	18
1301 to 3200	18	24
3201 and above	24	30

A- 1.3 The bottles to be selected for testing shall be chosen at random from the lot and for this purpose random number table shall be used. In case such tables are not available, the following procedure may be adopted.

Starting from any bottle, count as 1, 2, 3 up to r. Every r^{th} bottle thus counted shall be withdrawn, r being the integral part of N/n, where N is the total number of bottles in the lot and n the total number of bottles to be chosen.

A-2 Test Samples and Referee Samples

A-2.1 Samples for Microbiological Tests – The sample bottles selected for microbiological tests shall be divided at random into three equal sets and labeled with all the particulars of sampling. One of these sets of sample bottles shall be for the purchaser, another for the vendor and the third for the referee.

A-2.2 Samples for Other Tests – The sample bottles selected for other tests shall be divided at random into three equal sets and labeled with all the particulars of sampling. One of these sets of sample bottles shall be for the purchaser, another for the vendor and the third for the referee.

A-2.3 Referee Samples – Referee samples shall consist of a set of sample bottles for microbiological tests (see A-2.1) and a set of sample bottles for other tests (see A-2.2) and shall bear the seals of the purchaser and the vendor (or their representatives) and shall be kept at place agreed to between the two.

A-3 Testing of Samples

A-3.1 Tests for microbiological requirements – The sample bottles obtained as in A-2.1 shall be tested for all the microbiological requirements.

A-3.2 Test for other requirements – Sample bottles obtained as in A-2.2 shall be tested for all the other requirements.

A-4 Criteria for Conformity

A-4.1 Lot shall be considered as conforming to the requirements of this standard if all the samples tested (see A-3.1 and A-3.2) satisfy the requirements specified in the standard.

Annex-B
[Table-1, item (iv)]
Yeast and Mould Count

B-1 Apparatus

B-1.1 Screw Cap of Glass Stoppered – Glass bottles of suitable sizes (25 ml size is convenient)

B-1.2 Petri Dishes with covers - (100 X 15) mm

B-1.3 Pipettes – 1.1 ml, 10 ml and 11 ml

B-1.4 Water – Bath maintained at 43 ℃ to 45 ℃

B-1.5 Incubator – maintained at 25 ℃ ± 1 ℃ or at 30 ℃ ± 1 ℃

B-1.6 Autoclave – for working at 121 ºC

B-1.7 pH measuring equipment

B-1.8 Buffered water blank [99ml or 90ml (sterilized)] – Use phosphate buffer or Ringer's solution for dilutions. Prepare stock phosphate buffer solution by dissolving 34 g of potassium dihydrogen phosphate (KH_2PO_4) in 500 ml of distilled water. For use as dilution water, take 1.25 ml of stock phosphate buffer solution and make up to one litre with distilled water. Prepare stock ringer solution by dissolving sodium chlorides 9.0 g, potassium chloride 0.42 g, oxystalline calcium chloride ($CaCl_2$. $6H_2O$) 0.48 g (0.24 g in the case of anhydrous calcium chloride), sodium bicarbonate 0.2 g in 1000ml of distilled water. For use as diluent, take 250 ml of the stock solution and make up to 1000 ml with distilled water.

B-2 Reagents

B-2.1

Potato Glucose Agar (acidified)	
Infusion from 200g of white potatoes	1000 ml (boil 200g white peeled and sliced potatoes in about 500 ml of water for 15 minutes or until soft. Filter through cotton and make up to 100 ml)
Glucose	20 g
Agar	15 g
Final pH	3.5±0.1

B-2.2 Alternatively any of the two media in B-2.2.1 and B-2.2.2 may be used:

B-2.2.1 Salt dextrose Agar

Ammonium nitrate	1 g
Ammonium sulphate	1 g
Dipotassium hydrogen phosphate	4 g
Potassiumdihydrogen phosphate	2 g
sodium chloride	1 g
Dextrose	10 g
Yeast extract	1 g
Water	100 ml
Final pH	3.5 ± 0.1 ml

B-2.2.2 Wort agar medium particularly for canned fruits, sugar and sugar syrups

Malt extract (difco or equivalent)	15 g
Peptone	0.78 g
Maltose	12.75 g
Dextrin	2.75 g

Glycerol	2.35 g
Dipotassium phosphate	1.0 g
Agar-agar	20.0 g
Distilled water	100 ml
Final pH	4.8 ± 0.1 ml

B-2.3 Preparation of Medium – Heat the above mixture (B-2.1 or B-2.2.1 or B-2.2.2) to boiling to dissolve the ingredients. Distribute into tubes or flasks and autoclave for 15 minutes at 121 ºC. Melt in flowing stem or boiling water. Cool and acidify to the required pH with a sterile 10 percent tartaric acid or lactic acid or citric acid solution. Mix thoroughly and pour into plates. To preserve solidifying properties of the agar, do not heat the medium after the addition of the acid.

B-2.4 Tartaric acid – 10 percent solution, sterilized.

B-2.5 Lactic acid – 10 percent solution, sterilized.

B-2.6 Citric acid – 10 percent solution, sterilized.

B-2.7 Bromophenol pH dise and solution – pH 2.8 to 4.4

B-3 Procedure

B-3.1 Preparation of dilution blanks transfer 10 g (using sterile spatula) or 10 ml (using sterile pipette) of the sample, under aseptic conditions to a 90 ml sterile buffered water blank (11 g or 11 ml of the sample may be added to 99 ml of buffered water to give the same 1 to 10 dilution), shake this dilution 25 times in the usual manner just before inoculating the petri dishes with the different dilutions given below in duplicate.

1:2 (5 ml of the 1:10 dilution); 1:10 (1 ml of the 1:10 dilution); and 1:100 (0.1 ml of the 1.10 dilution)

B-3.2 Pouring plates, incubation and colony counting.

B-3.2.1 Prior to pouring adjust reaction of the melted medium in each container (preferably) (electrometrical) to pH 3.5±0.1 or 4.8±0.1 (depending upon the medium used) with sterile 10 percent tartaric or lactic or citric acid. Because remelting of acidified medium may destroy its solidifying properties, adjust only the amount needed for immediate plating. Amount of acid required for adjustment in any one flask of same batch or medium ordinarily will establish amount needed in each of the others containing equal quantities thereof.

B-3.2.2 For colorimetric adjustments, use bromophenol blue and titrate 5ml of medium with dilute acid prepared by adding one millilitre of sterile 10 percent stock acid solution to 19 ml of water. The number of ml of dilute acid used to titrate to pH 3.5 or 4.8 will represent the amount of stock solution that should be added to 100 ml of medium. The amount of 10 percent acid required will vary, depending upon buffering properties of the medium.

B-3.2.3 The petri dishes containing different dilutions are flooded with the melted and adjusted medium. Not more than 30 minutes should elapse from the time of preparing dilution to the pouring of the medium on the plates. After solidification the agar plates are to be incubated for 5 days at (25 ± 1) ºC in case of meat and meat products and at (30 ± 1) ºC in other cases.

B-3.2.4 At the end of the incubation period, count the colonies of yeast and mould in the same manner as counting bacterial colonies in the plate count if interested only in the total yeast and mould count, generally. It is desirable to differenciate between moulds and yeasts. It is advisable to examine the plates at the end of three days for yeast colonies as they are likely to be overgrown by mould growth. Make a separate count of the typical yeast colonies which usually will be characterized as smooth; moist, elevated or the typical yeast colonies count the mould colonies, mould colonies, surface colonies. After containing are easily recognized by their profuse growth of hyphae. If only yeast counts are required, add 0.25 percent of sterile sodium propionate solution to the plate at the time of pouring to inhibit the growth of moulds.

B-3.2.5 Although the acidity of the medium is supposed to inhibit the growth of bacterial colonies, same may develop in spite of the acid. Usually these may be distinguished from the yeast colonies because they are smaller. If there is doubt regarding the identity of yeast or bacterial colonies, the colonies in question should be confirmed by microscopic observation of stained smears.

B-3.3 Reporting of results – The number of yeast and mould colonies per millilitre or per gram of the material should be reported as the total yeast and mould count, although in control work the separate yeast and mould counts sometime informative. To give the actual colony counts per millilitre or per gram of sample, the colony counts obtained from 1:2 dilution (5 ml of the 1:10 dilution) should be multiplied by the factor 2:those from 1:10 dilution (1ml of the 1:10 dilution) by the factor 10 these from 1:100 dilution (0.1 ml of the 1:10 dilution) by factor 100.

Annex–C
[Table -1, item (v)]
Determination of Coliform Count

C -1 General

C-1.1 Coliform Bacteria – Coliform bacterial include all aerobic and facultative anaerobic gram-negative non- spore forming bacteria which ferment lactose with the production of acid and gas. A positive presumptive test is indicated by formation of acid and gas within 48 hours at 35 ℃ to 37 ℃ in fermentation tube containing lactose bile salt broth. Alternatively, the development of dark red colonies at least 0.5 mm in diameter in a solid medium (violet red bile agar) within 20 to 24 hours at 35 ℃ to 37° C may be considered as a positive evidence of the presence of coli form bacteria. Violet red bile agar is one of the standard media used for determination of general types of coliform organisms including those of faecal origin in water, milk and other materials of sanitary importance.

C-2 Apparatus

C-2.1 Weighing scoop sterile – with counter mass (weight).

C-2.2 Bacteriological transfer pipettes sale – accurately graduated with cotton plug in the upper orifice.

C-2.3 Dilution bottles, sterile – made of heat-recreant glass (preferably silicate glass) closed with rubber stoppers (preferably screw cap) with new friction-fit liners for making them leak- proof and of the following capacities:

a) 150 ml with mark at 99 ml level; and
b) 25 ml with mark at 9 ml level.

C-2.4 Petri dishes – with outside dish diameter 100 mm inside dish diameter 91 mm and depth scratches or other defects which would interfere with counting of colonies.

C-2.5 Bacteriological tubes sterile – 25 ml capacity with a mark at the 10 ml level with cotton plugs.

C-3 Reagent

C-3.1 The following reagents are required.

C-3.2 Dilution Water – Dissolve 34 g of potassium dihydrogen phosphate (KH_2PO_4) in 500 ml of distilled water, adjust to pH 7.2 with sodium hydroxide solution (1 N) and make up to one liter with distilled water. Dilute 1.25 ml of this stock phosphate buffer solution with water to one liter to obtain dilution water.

C-3.3 Weigh the ingredients properly mentioned below and take these in a suitable container (neutral glass or stainless steel containing desired amount of distilled water). Noted that readymade dehydrated media can also be used

Ingredients	Qty (gm/Ltr)
Yeast extract	3.0g
Peptone	7.0g
Sodium taurocholate	1.5g
Lactose	10.0g
Sodium chloride	5.0g
Agar-agar	20.0g
Indicator	
Neutral red	0.03g
Crystal violet	0.002g
Water	100 ml
Final P^H	7.4 ± 0.1

C-3.3.1 Preparation and sterilization of medium – Soak the materials for 3 to 5 minutes in water, then bring the mixture into complete solution with minimum delay by boiling above an asbestos-centered wire gauze, over a flame. Stir continuously and efficiently to avoid charring. Adjust the solution to P^H 7.4 ± 0.2 at 50 °C with sodium hydroxide solution. Filter through cotton pad till clear filtrate is obtained. Fill into bacteriological tubes to 10 ml mark. Sterilize in an autoclave at 121 °C for 15 minutes.

C-4 Procedure

C-4.1 Dilution – Weigh 11g/11ml of the material from the samples for bacteriological examination using a sterile spatula and suspend in 99 ml of dilution water at 45 °C. Agitate mildly, soak for one to three minutes and then agitate vigorously to avoid churning out the fat. Prepare dilutions of this and add one millilitre of suitable dilutions in triplicate to the sterile petri dishes.

C-4.2 Pouring plates – Melt the medium (see C-3.3.1) in bacteriological tubes and keep at 48 ºC to 50 ºC. Introduce this medium aseptically a 42 °C to 44 °C into the Petri dishes and mix by rotating and tilting dishes without spreading over the edges spread the mixture evenly over the bottom of the plate. Allow to solidify. After solidification of medium in plate, add cover layer of the medium.

C-4.3 Incubation – Invert the plates and incubate at 35 °C to 37 °C for 24 hours.

C-4.4 Counting – Count the dark red colonies which have a diameter of 0.5 mm or over.

C-4.5 Computation – Compute the coliform count per gram from the dilutions used (see C-4.1).

Note-4: In case of doubt regarding the colonies developed on violet red bile agar representative colonies are picked and transferred to lactose bile salt broth in tubes having inverted vials. Production of acid and gas is confirmatory for coliform organisms.

Note-5: All precautions shall be observed to prevent microbiological contamination throughout the test.

Annex-D

(Sub-clause - 2.1)

BDS No	Title
BDS 103	Methods of rounding off numerical value
BDS 822	Code of Hygienic Conditions for Food Processing Units.
BDS 833	Water for Laboratory use
BDS 1240	Packaged drinking water
BDS ISO 6222	Water quality — Enumeration of culturable micro-organisms — Colony count by inoculation in a nutrient agar culture medium
BDS ISO 19250	Water quality — Detection of *Salmonella* spp.
BDS ISO 9308-2	Water quality — Enumeration of Escherichia coli and coliform bacteria – Part 2: Most probable number method