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DRAFT TANZANIA STANDARD

Sugar free non-carbonated soft drinks — Specification

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TANZANIA BUREAU OF STANDARDS

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0 Foreword

This Tanzania Standard was published under the authority of the Board of Directors of Tanzania Bureau of Standards.

Tanzania Bureau of Standards (TBS) is the statutory national standards body for Tanzania established by the Standards Act Cap. 130.

Tanzania Standards are developed through Technical Committees that are representative of key stakeholders including government, academia, consumer groups, private sector and other interested parties. The Technical Committees work under the supervision of Divisional (sectoral) Committees. The Standards are developed in accordance with the Guide and Procedure for Development of Tanzania Standards and TZS 0, *Guide for presentation of Tanzania Standards*.

Tanzania Standards are subject to review, to keep pace with science and technological advances. Users of the Tanzania Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

This Tanzania Standard was developed under the supervision of Agriculture and Food Divisional Standards Committee [AFDC]. The Technical Committee responsible for the standard is AFDC 12, Processed fruits and vegetables products

The reporting of the results of a test or analysis made in accordance with this Tanzania Standard, if the final value, observed or calculated is to be rounded off, shall be done in accordance with TZS 4.

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Sugar free non-carbonated soft drinks — Specification

1. Scope

This Tanzania standard specifies the requirements, sampling and test methods for sugar free non-carbonated soft drink intended for human consumption

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.

TZS 4, *Rounding off numerical values*

CXS 192 *General standard for Food additives*

CAC/GL 66-2008 *Guidelines for the Use of Flavourings*

TZS 114, *Soft drink manufacturing units – Code of hygiene*

TZS 118, *Foodstuffs – General Guidance for the Enumeration of microorganisms by Colony Count Technique at 30^0C*

TZS 131, *Microbiology - General guidance for enumeration of yeast and mould by Colony count technique at 25^0C*.

TZS 109, *Code of hygiene for food processing units*

TZS 268, *General atomic absorption spectrophotometric method for determination of lead in food stuffs*

TZS 538, Packaging*, marking and labelling of foods*

TZS 1492, *Fruits and Vegetables – Determination of tin content*

TZS 1491, *Fruits and Vegetables – Determination of pH*

TZS 1496, Fruits *and Vegetables – Determination of soluble solids*

TZS 1502, Fruits *and Vegetables – Determination of Arsenic content*

TZS 1504, Fruits *and Vegetables – Determination of Ethanol Content*

TZS 789, *Potable (Drinking) water Specification*

TZS 132, *Edible common salt Specification*

TZS 59, *Water Distilled Quality Specification*

TZS 1581-1, *Determination of cadmium content – Method graphite furnace atomic absorption spectrometry*

3 Terms and definitions

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For the purpose of this standard, the following definitions shall apply.

3.1
sugar free non-carbonated soft drink

non-alcoholic beverage without sugar and do not contain dissolved carbon dioxide; prepared from potable water; non-nutritive sweetening agents, flavoring materials with or without the following ingredients; colourants, acidulants, clouding agents, preservatives and other permitted food additives.

3.2
non-nutritive sweeteners
sweeteners that contain no calories at all or contain negligible amount of calories

4 Requirements

4.1 General requirements

4.1.1 Ingredients

The following ingredients may be used in the preparation of sugar free non-carbonated soft drinks;

a) Caffeine

b) Edible common salt complying to TZS 132

c) Non-nutritive Sweeteners not exceeding levels prescribed in CXS 192. Nutritive sweeteners shall not be added in this product.

d) Water used in the manufacture of non-carbonated soft drinks shall be potable water conforming to TZS 789

e) Flavoring materials-When used in sugar free non-carbonated soft drinks shall be in accordance with CAC GL 66

4.1.2 Physical and organoleptic properties

a) Flavour

Sugar free non-carbonated soft drinks shall have a well-balanced and pleasant flavour characteristic of the type of drink and be free from off flavours and odours.

b) Appearance

Sugar free non-carbonated soft drinks shall have characteristic of the product. It shall be free from insect and rodent contamination; practically free from other extraneous matter and shall be clear if stored under normal conditions. The cloudy non-carbonated flavored soft drinks shall constitute a stable emulsion.

4.2 Specific requirements

Sugar free non-carbonated soft drink shall comply to the specific requirements given in Table 1 when tested in accordance with the test methods therein.

Table 1 — Specific requirements for sugar free non-carbonated soft drink

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S/No	Parameter	Requirement	Test method
i.	Degree Brix at 20^0C, max.	0.5	TZS 1496
ii.	pH	2.5 - 4.0	TZS 1491
iii.	Caffeine, mg/l, max.	150	Annex A

5 Food additives

The use of food additives shall be in accordance with CXS 192. Nutritive sweeteners shall not be added in this product.

6. Hygiene

6.1 Sugar free non-carbonated soft drink shall be processed in premises and an environment that is hygienically maintained and shall be handled in accordance with the requirements provided in TZS 114 and TZS 109.

6.2 Sugar free non-carbonated soft drink shall conform to the microbiological limit specified in Table 2 when tested in accordance with the test methods specified therein:

Table 2 — Microbiological limits for sugar free non-carbonated soft drink

S/No	Microorganism	Limit	Test method
i.	Total plate count, cfu/ml, max.	10^3	TZS 118
ii.	Coliform, cfu/ml	Absent	TZS 729
iii.	Yeast and moulds, cfu/ml, max.	10^2	TZS 131

7 Contaminants

Sugar free non-carbonated soft drink on testing shall not contain heavy metal contaminants above the levels specified in Table 3 when tested in accordance with the test methods specified therein.

Table 3 — Maximum limits of heavy metal contaminants

S/No	Heavy Metal contaminant	Maximum Requirement (mg/l),	Test method
i.	Arsenic (As),	0.1	TZS 1502
ii.	Lead (Pb),	0.1	TZS 268
iii.	*Tin (Sn),	150	TZS 1492

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iv.	Cadmium (Cd),	0.003	TZS 1581-1
*Applies to canned packaged products			

8 Sampling and test methods

8.1 Sampling

The method of drawing representative samples of the sugar free carbonated soft drinks shall be as described in Annex B

8.2 Test methods

Sugar free carbonated soft drinks shall be tested in accordance with test methods described in this Tanzania standard

9 Packaging, marking and labelling

9.1 Packaging

9.1.1 Sugar free non-carbonated soft drinks shall be filled in glass containers, lacquered cans, suitable food grade plastic containers or other food grade dispensing units. The interior on the neck finish of bottles shall be free from chips, cracks and other defects. Cans shall be free from corrosion and internal scratches or other lacquer imperfections. Closures shall be clean at the time of capping and seaming.

9.1.2 The containers shall be filled under strict sanitary conditions.

9.1.3 In case of cans provided with pull tabs, the tabs shall remain intact with the can on opening without littering

9.2 Marking and labelling

9.2.1 Sugar free non-carbonated soft drinks shall be marked and labelled in accordance with TZS 538. Labels shall be clean, neat and fixed securely. The following information shall appear delibly and legibly on each container or cap or label;

a) Name of the product; ‘sugar free non-carbonated soft drink’ or ‘zero sugar non-carbonated soft drinks’

b) A statement shall prominently feature on the label that the product is not suitable for infant, young children, pregnant and lactating women shall be included covering 15% of the label size to read “Haifai kwa matumizi ya watoto, wajawazito na wanaonyonyesha”

c) Brand or trade name, if any

d) Name, physical and postal address of the manufacturer;

e) Date of manufacture;

f) Expiry date;
g) Batch or code number;

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h) List of ingredients;

i) Net volume of the contents in ml or litres; and

j) Declaration of the use of non-nutritive sweeteners and type of sweetener used

9.2.2 The language of warning statement on the label shall be “Kiswahili” or Kiswahili and English. A second language may be used depending on the designated market.

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ANNEX A

(Normative)

Determination of caffeine content

A.1 Principle

Carbon dioxide is removed from the sample by means of dry air or dry nitrogen. An extraction with chloroform is performed on the decarbonated sample.

By means of a graph of absorbance against concentration of standards, the content of caffeine of the sample is determined.

A.2 Reagents

During analysis use only reagents of recognized analytical grade and only distilled water in accordance with TZS 59: or water of equivalent purity.

a) *Chloroform /dichrolomethane/ethyl acetate*
b) *Ammonia solution,* concentrated
c) *Hydrochloric acid,* approximately molar. Take 100 ml of concentrated hydrochloric acid (Sp.Gr.1. 184) and dilute to a litre.
d) *Standard caffeine solution.* Prepare a solution containing 10 ml using molar hydrochloric acid as solvent.

A.3 Apparatus

A spectrophotometer or photoelectric colorimeter capable of measuring optical density at a wavelength of 227nm

A.4 Procedure

Transfer 25 g of decarbonated sample into a small separating funnel. Make distinctly alkaline with ammonia solution and chloroform, washing each extract with the same 10 ml of water contained in a second separating funnel, and finally with the extract once with 10 ml of chloroform. Filter into a small flask. Evaporate or distill the combined extracts and dry the residue in molar hydrochloric acid and make up to volume in a 50 ml volumetric flask with the same acid. Prepare a series of standards and read the absorption at 272 nm using approximately molar hydrochloric acid for setting the instrument. Set the instrument by means of a blank prepared from water treated in exactly the same manner with the test solution and read absorption of the test solution.

A.5 Expression of results

Plot a graph of concentrations of standard caffeine solutions against their absorbance. From this graph determine the concentration of the alkaloid (caffeine) in the original sample. Report the results as mg/kg of anhydrous caffeine in the original sample.

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Annex B

(Normative)

Sampling

B1 Scale of sampling

B 1.1 *Lot*

B 1.1.1 All containers 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. Sample shall be tested from each lot for ascertaining conformity to the requirements of the standard.

B 1.1.2 The number of containers to be selected from a lot for testing for microbiological and other requirements shall depend on the size of the lot and shall be in accordance with Table A.1.

B 1.1.3 The containers to be selected for testing shall be chosen at random from the lot by following procedure. Starting from any container, count them as 1, 2, 3,..... up to r. Every r^{th} container 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 is the total number of bottles to be chosen

Table B.1 – Number of containers to be selected for sampling

Number of containers in the lot	**Number of containers to be selected**	
	Microbiological	**Other tests**
Up to 1300	12	18
1301-3200	18	24
3201 and above	24	30

B.2 Test samples and reference samples

B. 2.1 *Sample for microbiological tests*

The sample containers selected for microbiological test (see Table A.1) shall be divided at random into at least three equal sets and labelled with all particulars of sampling. One of these sets of sample containers shall be for purchaser, another for the vendor and the third set is the reference sample.

B. 2.2 *Samples for other tests*

The sample containers selected for other tests (see Table A.1) shall be divided at random into at least three equal sets and labeled with all the particulars of sampling. One of these sets of sample containers shall be for the purchaser, another for vendor and the third is the reference.

B. 2.3 *Reference samples*

Reference samples shall consist of set of sample containers for microbiological tests and a set of sample containers for other tests and shall bear the seals of the purchaser and the vendor as agreed to between the two.

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