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DRAFT TANZANIA STANDARD

REFINED SUGAR – SPECIFICATION

TANZANIA BUREAU OF STANDARDS

This Tanzania Standard was published under the authority of the Board of Directors of the Tanzania Bureau of Standards on 2011-07-28.

The Tanzania Bureau of Standards (TBS) is the statutory national standards body for Tanzania, established under the Standards Act No. 3 of 1975, repealed and replaced by the Standards Act No. 2 of 2009.

The Agriculture and Food Divisional Standards Committee under whose supervision this Tanzania Standard was prepared, consists of representatives from the following organizations:

Ministry of Agriculture, Food Security and Cooperatives
Government Chemist Laboratory Agency
Sokoine University of Agriculture (SUA)
Tanzania Food and Nutrition Centre (TFNC)
Tanzania Consumers Protection Association
*Tanzania Food and Drugs Authority (TFDA)
Biashara Consumer Services Limited
Small Industries Development Organisation
Tanzania Revenue Authority (Customs)

The organization marked with an asterisk (*) in the above list, together with the following, were directly represented on the Technical Committee entrusted with the preparation of this Tanzania Standard.

Sugar Board of Tanzania
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Coca Cola Kwanza Limited
Mtibwa Sugar Company Limited
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0 FOREWORD

Refined sugar is manufactured from sugar cane by process of purification of raw sugar, consisting broadly of affination, melting, chemical treatment, filtration, decolorization and subsequent recrystallization in vacuum pan. Refined sugar is suitable for direct human consumption, and for industrial use. This Tanzania Standard is a revision of the third version finalized in 2011.

This Tanzania Standard was prepared in order to ensure safety and quality of the refined sugar traded in the country.

In the preparation of this Tanzania Standard, considerable assistance was derived from:

IS 1151: 1969, *Specification of refined sugar*, reaffirmed in 1987; published by the Bureau of Indian Standards

CODEX STAN 4, *2001 Codex standard for white sugar*, joint publication by FAO/WHO Food Standards Programme

ICUMSA Methods Books, 1994, published by the International Commission for Uniform Methods of Sugar Analysis

East African Standard No 5: 2010, *Refined Sugar – Specification*, published by the East Africa Community Secretariat.

This fourth edition cancels and replaces the third edition (TZS 101: 2011) which has been technically revised.

In reporting 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, it shall be done in accordance with TZS 4 (see clause 2).

1 SCOPE

This Tanzania Standard prescribes the requirements and the methods of sampling and test for refined sugar intended for industrial use or direct human consumption

2 REFERENCE

The following referenced documents are indispensable for the application of this standard. 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*

TZS 59: *Water – Distilled quality – Specification*

TZS 109: *Code of hygiene for food processing units – General*

ICUMSA Methods Book,

CODEX STAN 192 *General Standard for Food Additives*

TZS 122 Microbiology of food and feeding stuffs – Horizontal method for the detection of *salmonella spp*

TZS 119:2002(E), *Microbiology – General guidance for enumeration of coliforms – Most probable number technique*

3 TERMS AND DEFINITIONS

For the purpose of this Tanzania Standard, the following definitions shall apply.

3.1 refined sugar

purified and granulated sugar, manufactured from any raw sugar by the process of purification consisting broadly of affination, melting, chemical treatment, filtration, decolourisation and re-crystallisation

3.2 ICUMSA unit

international unit developed by International Commission for Universal Methods of Sugar Analysis (ICUMSA) for expressing the purity of sugar and is directly related to the colour of sugar

3.4 polarisation (^{0}Z)

estimate of the sucrose content in sugar

3.5 lot

collection of packages of the same size, type and style which have been manufactured and packaged under essentially the same conditions.

3.6 food additive

any substance, not normally consumed as food by itself and not normally a typical ingredient of refined sugar whether or not it has nutritive value, the intentional addition of which to refined sugar for technological purposes in the manufacture, processing, preparation, treatment, packaging, transport or holding of such refined sugar results or may be reasonably expected to result (directly or indirectly) in it or its product becoming a component of or otherwise affecting the characteristics of such refined sugar. The term does not include contaminants or substances added to refined sugar for maintaining or improving its nutritional qualities.

3.7 contaminant

any substance not intentionally added to refined sugar which is present in such refined sugar as a result of production including sugar cane husbandry, refined sugar manufacture, processing, treatment, packing, packaging, transport or holding of such refined sugar or as a result of environmental contamination. The term does not include insect fragments, rodent hairs and other extraneous matter (see 5.1).

4 REQUIREMENT

4.1 General requirement

Refined sugar shall be the purified sucrose (saccharose). It shall be in the form of uniform, free-flowing crystals; free from dirt, foreign and extraneous matter. The refined white sugar shall be free from fermented, musty or undesirable odours.

4.2 Specific requirements

Refined sugar shall also comply with the requirements given in table 1.

Table 1 — Composition requirement for refined sugar

S No	Characteristic	Requirement	Method of test
i.	Polarisation, °Z, min.	99.8	ICUMSA Method GS 2/3-1
ii.	Invert Sugar content, % m/m, max.	0.04	ICUMSA Method GS 2/3/9-5 ICUMSA Method GS 2/9-6
iii.	Conductivity ash, % m/m, max.	0.04	ICUMSA Method GS 2/3-17
iv.	Moisture content in percent (loss of drying for 3 h at 105 °C± 2 °C), max.	0.1	ICUMSA Method GS 2/1/3/9-15
v.	Colour, in ICUMSA units at 420 nm, max.	60	ICUMSA Method GS 2/3-10
vi	Sulphur dioxide, mg/kg, max.	10	ICUMSA GS 2/3-35
vii	Water insoluble matter, mg/kg. max.	60	ICUMSA Method GS 2/3-19

4.3 Food additives

Refined white sugar may contain only those food additives permitted by Codex Alimentarius as prescribed in Codex Stan 192

5 CONTAMINANTS

5.1 Metal contaminants

The refined sugar shall contain metal contaminants in amount not exceeding those prescribed in Table 2

Table 2 — Requirement for metal contaminants

S No	Parameter	Requirement	Method of test
i.	Arsenic (As), mg/kg, max.	1	ICUMSA Method GS 2/3/9-25 ICUMSA Method GS 2/3-23
ii.	Copper (Cu), mg/kg, max.	2	ICUMSA Method GS 2/3-29
iii.	Lead (Pb), mg/kg, max.	0.5	ICUMSA Method GS 2/1/3-27 ICUMSA Method GS 2/3-23

5.2 Pesticide residues

Refined white sugar shall conform to the maximum residue limits established by the Codex Alimentarius Commission for this commodity.

6 HYGIENE

6.1 Refined white sugar shall be prepared and handled in accordance with the requirements of TZS 109:2009

6.2 Microbiological requirements

The product shall conform to the microbiological limits in table 3.

Table 3 — Microbiological requrement for refined white sugar

Microbiological parameter	Requirements	Method of test
Total Plate Count (mesophilic), cfu/10g ,	10^3	ICUMSA GS2/3-41

max		
Yeast and moulds, cfu/10g, max	50	ICUMSA GS2/3-47
E.coli, cfu,/g	Absent	TZS 119
Salmonella, per 25 g	Absent	TZS 122

7 SAMPLING AND TESTS

7.1 Sampling

Representative sample of the product shall be drawn as prescribed in annex A.

7.2 Tests

Tests shall be carried out in accordance with the methods prescribed in table 1, 2 and table 3.

7.3 Quality of reagents

Unless specified otherwise, pure chemicals shall be employed in tests and distilled water shall be used where the use of water as a reagent is intended (TZS 59, see clause 2).

NOTE: 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis (Chemicals of Analytical Grade).

8 PACKAGING, MARKING AND LABELLING

8.1 Packaging

8.1 Refined sugar shall be packed in a clean and sound food grade materials that will afford its adequate protection during storage, transportation, distribution and use.

8.2 Marking and labelling

Each bag shall be suitably marked so as to give the following information:

a) Name of the product shall be "Refined Sugar";

b) Net contents by mass in SI units; as per weight and measures regulations

c) Name and address of the manufacturer of the product;

d) Country of origin;

NOTE: The words, "Produce of Tanzania" shall be declared on the label.
If the refined sugar has been processed from imported raw sugar; Tanzania, in which the processing has been performed shall be considered to be the country of origin of the refined sugar for the purpose of labeling.

e) Lot/Identification number in code or in clear;

f) Manufacturer's registered trade mark, if any;

g) Year of production.

9.3 Certification marking

Each bag shall also be marked with TBS Standards Mark of Quality

NOTE: The TBS Standards Mark of Quality may be used by the manufacturers only under license from TBS. Particulars of conditions under which the licences are granted may be obtained from TBS.

ANNEX A

SAMPLING OF REFINED SUGAR

A.1 General requirements for sampling

In drawing, preparing, storing, and handling of samples, the following precautions and directions shall be observed:

A.1.1 Samples shall be taken in a protected place not exposed to damp air, dust or soot.

A.1.2 The sampling instruments shall be clean and dry when used.

A.1.3 When sampling for microbiological purposes the sampling instruments and containers for samples shall be sterilized preferably by dry heat at 170 ^{o}C for one hour before use.

A.1.4 Precautions shall be taken to protect the samples, the material being sampled, the sampling instruments and the containers for samples from adventitious contamination.

A.1.5 The samples shall be placed in clean, dry, and moisture-proof containers.

A.1.6 The sample containers shall be sealed air-tight after filling and marked with name of material, date of sampling, name of the manufacturer, name of the person sampling and such other particulars as considered necessary.

A.1.7 Samples shall be protected from light as far as practicable and shall be stored in a cool, dry place.

A.2 Scale of sampling

A.2.1 Lot

All the bags in a single consignment declared to contain refined sugar shall constitute a lot.

Each lot shall be tested for ascertaining the conformity of the refined sugar to the requirements of this specification.

A.2.2 The number of bags to be selected *(n)* for sampling shall be in accordance with the formula

$$n = \sqrt{N}$$

A.2.3 The bags shall be selected at random, and in order to ensure the randomness of the selection, random number tables may be used. In case such tables are not available the following procedure may be adopted:

Starting from any bag, count them as 1,2,3,….. etc., up to *r* in a systematic manner where *r* is equal to the integral part of the value of *N/n, N* being the total number of bags in the lot and *n* the number of bags to be chosen. Every *r* th bag thus counted shall be separated until the requisite number of bags is obtained from the lot to give samples for test.

A.3 Test and referee samples

A.3.1 Draw a small but equal quantity of material from different parts of each selected bag. The total quantity of material taken shall be sufficient to conduct the tests for all the characteristics as given in the specification and shall not be less than 750 g.

A.3.2 Preparation of composite sample

Mix thoroughly all portions of the material drawn from different parts of each selected bag. Out of these portions a small but approximately equal quantity shall be taken so as to form a

composite sample of not less than 150 g. The composite sample shall be divided into three equal parts, one for the purchaser, another for the vendor, and the third for the referee. These parts shall be immediately transferred to thoroughly clean and dry bottles which shall be sealed air-tight and labeled with all the particulars as given in A.1.6.

A.3.3 Preparation of individual samples

The remaining material from each selected bag (after a small quantity needed for formation of the composite samples has been taken out), shall be divided into three, equal parts. These parts shall be immediately transferred to clean and dry bottles which are then sealed with all the particulars of sampling as given in A.1.5. The material in each such sealed bottle shall constitute a test sample. These individual test samples shall be separated into three identical sets of test samples in such a way that each set has a sample representing each selected bag. One of these three sets shall be marked for the purchaser, another for the vendor, and the third for the referee.

A.3.4 Referee sample

Referee samples shall consist of the composite sample (see A.3.2) and a set of individual test samples (see A.3.3) marked for this purpose and shall bear the seals of the purchaser and the vendor. These shall be kept at a place agreed to between the two.

A.4 Number of tests

A.4.1 Each individual sample shall be tested for moisture, total reducing sugars, sucrose, sulphur dioxide, metal contaminants and microbiological count.

A.4.2 The test for description, colour and specific conductivity shall be made on the composite sample.

A.5 Criteria for conformity

A lot shall be declared as conforming to the specification for the material when the criteria given in A.5.1 and A.5.2 are satisfied.

A.5.1 All the test results of the characteristics which are tested on individual samples (see A.4.1) shall satisfy the corresponding requirements as specified in clause 5.3, table 1 and table 2.

A.5.2 All the test results of the characteristics which are tested on composite sample (see A.4.2) shall satisfy the corresponding requirements as specified above.