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DRAFT TANZANIA STANDARD

Brown sugar — Specification

TANZANIA BUREAU OF STANDARDS

Brown sugar — Specification

0. Foreword

Brown sugar derived from sugar cane or sugar beet by partial purification of raw sugar cane/beet juice or spraying of refined sugar with sugar syrup or molasses followed by subsequent drying to achieve free flowing sugar intended for direct human consumption

This Tanzania Standard has been developed in order to ensure safety and quality of the Brown sugar traded in and outside the country

This fifth edition replaces and repeals the fourth edition (TZS 831:2017).

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

EAS 16:2010, Brown sugar — Specification, published by the East African commission

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, rounding off numerical values.

1. Scope

This Tanzania Standard prescribes the requirements, methods of sampling and test for light brown and brown sugar 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.

CODEX 192, General Standard for Food Additives

ICUMSA GS 2/3-35, The Determination of Sulphite in Refined Sugar Products excepting Brown Sugars by an Enzymatic Method – Official The Determination of Sulphite in Brown Sugars – Tentative

ICUMSA Method GS 1/2/3/9-1,The Determination of the Polarisation of Raw Sugar by Polarimetry

ICUMSA Method GS 1/3/4/7/8-13, The Determination of Conductivity Ash in Raw Sugar, Brown Sugar, Juice, Syrup and Molasses – Official

ICUMSA Method GS 2/1/3/9-15,The Determination of Sugar Moisture by Loss on Drying – Official

ICUMSA Method GS 2/3/9-5The Determination of Reducing Sugars in Purified Sugars by the Knight and Allen EDTA Method

ICUMSA Method GS 2/9-6,The Determination of Reducing Sugars in White Sugar and Plantation White Sugar by the Modified Ofner Titrimetric Method – Official

ICUMSA Method GS2/3/9-19The Determination of Insoluble Matter in White Sugar by Membrane Filtration – Official

ICUMSA Method GS9/1/2/3-8, The Determination of Sugar Solution Colour at pH 7.0 by the MOPS Buffer Method – Official (Reference) Method

TZS 109, Food processing units – Code of hygiene

TZS 118, Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of microorganisms – Colony-count technique at 30^0c

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

TZS 2426-1, 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

TZS 4, Rounding off numerical values

TZS 538, Labelling of pre-packaged foods — General requirements

TZS 730-2 Microbiology of the food chain — Horizontal method for the enumeration of beta- glucuronidase-positive Escherichia coli — Part 1: Colony-count technique at 44 degrees C using membranes and 5-bromo-4-chloro-3-indolyl beta-D-glucuronide

3. Terms and definitions

For the purpose of this Tanzania Standard, the following terms and definitions shall apply:

3.1. sugar

crystalline and purified sucrose (saccharose), as a product of sugarcane or sugar beet.

3.2. brown sugar

sugar derived from sugar cane or sugar beet by partial purification of raw sugar cane/beet juice or spraying of refined sugar with sugar syrup or molasses followed by subsequent drying to achieve free flowing sugar intended for direct human consumption.

3.3. ICUMSA unit

an International Unit developed by International Commission for Uniform Methods of Sugar Analysis (ICUMSA) for expressing the purity of sugar and it is directly related to the colour of sugar.

3.4. polarization (^{0}Z)

an estimate of the sucrose content of sugar.

4. Requirements

4.1. General requirements

Brown sugars shall be:

a. brownish in colour
b. Free flowing crystals;
c. practically free from dirt, foreign and extraneous matter; and
d. Free from fermented, musty or undesirable odours.

4.1. Specific requirements

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

Table 1 – Specific requirements for brown sugars

S.No	Characteristic	Requirement/limits		Test method
		Light brown	brown	
i	Polarization, ^{0}Z, min.	99.2	>99.0	ICUMSA Method GS 1/2/3/9-1,
i	Invert sugar content, % m/m, max.	0.2	0.2	ICUMSA Method GS 2/3/9-5, ICUMSA Method GS 2/9-6,
iii	Conductivity ashes, % m/m, max.	0.3	0.3	ICUMSA Method GS 1/3/4/7/8-13
iv	Moisture content, % mm (loss on drying for 3 h at 105 °C ± 2 °C), max.	0.15	0.2	ICUMSA Method GS 2/1/3/9-15
v	Colour, in ICUMSA units, max.	700	1 300	ICUMSA Method GS 9/1/2/3-8
vi	Sulphur dioxide, mg/kg, max.	20	20	ICUMSA GS 2/3-35
Vii	Water insoluble matter, mg/kg, max.	250	250	ICUMSA Method GS 2/3/9-19

4.3. Food additives

Brown sugars may contain only those food additives permitted by Codex Alimentarius Commission as prescribed in Codex Stan 192

5 Contaminants

5.1. Pesticide residues

Brown sugar shall conform to those maximum pesticide residue limits established by the Codex Alimentarius Commission.

5.2. Heavy metals

Brown sugar shall conform to those maximum heavy metal contaminant limits established by the Codex Alimentarius Commission.

6 Hygiene

Brown sugar shall be manufactured, handled, stored and transported in accordance with the requirements given in TZS 109). Also shall comply with the requirements specified in Table 2

Table 2 – Microbiological requirement for brown sugars

S.No	Microbiological parameter	Requirement	Test method
i	Total Plate Count (mesophylic), cfu/g, max.	10^3	TZS 118
ii	Yeast and moulds, cfu/g, max.	50	TZS 2426-1
iii	*Escherichia coli*, cfu,/ g	Absent	TZS 730-2
iv	*Salmonella,* per 25 g	Absent	TZS 122

5 Methods of sampling and test

5.1 Sampling

The method of drawing representative samples of the product and criteria for conformity shall be asprescribed in annex A of this Tanzania Standard.

5.2 Tests

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

6 Packing, marking and labelling

8.1. Packing

Brown sugar shall be packaged in food grade materials that ensure product safety and integrity.

8.2. Marking and labelling

In addition to the labelling requirements given in TZS 538, the package shall be legibly and indelibly labelled with the following information:

a) name of the product (light brown sugar or brown sugar);

b) net contents by weight

c) name and address of the manufacturer of the product and/or the packer, distributor,importer, exporter or vendor of the product shall be declared; and

d) country of origin;

e) manufacturer's registered trade mark, if any;

f) date of manufacture and best before

Annex A
(normative**)**

Sampling of brown 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 °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 of the consignments.

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 Tanzania brown sugar shall constitute a lot.

Samples shall be tested separately for each lot for ascertaining the conformity of the Tanzania brown sugar.

A.2.2 The number of bags to be selected *(n)* from the lot shall depend on the size (*N*) of the lot and shall be in accordance with the formula:

$$n = \sqrt{N}$$

A.2.2.1 Those bags shall be selected at random from the lot; to ensure the randomness of selection a random number table, as agreed to between the purchaser and the supplier shall be used. In case such a table is not available, the following procedure shall be used:

Starting from any bag, count them as 1, 2, 3… up to *r* and so on in one order, where *r* is equal to the integral part of *N*/*n*, *N* being the total number of bags in the lot and *n* the number of bags to be selected. 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.2.2.2 In case of bags stacked in a pyramidal shape, approximately equal number of bags shall be selected from all exposed sides of the lot, so as to give the required number of sample bags.

A.3 Preparation of sample

A.3.1 From the top, middle and bottom portions of each of the selected bags (see A.2), approximately equal quantity of sugar shall be taken with the help of a suitable sampling instrument. The sample collected from each of the bags shall be thoroughly mixed so as to give a composite sample of 600 g. The composite sample thus prepared shall be divided approximately into three equal parts; one for the purchaser, one for the supplier, and the third for the referee and sealed air tight with particulars as given in A.1.6.

A.3.2 Number of tests

The composite sample prepared as under A.3.1 shall be tested for the characteristics as prescribed in table 1.

A.3.3 Criteria for conformity

The lot shall be declared as conforming to this specification, when the test results on various characteristics obtained on the composite sample satisfy the corresponding requirements.