



## **DRAFT EAST AFRICAN STANDARD**

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**Fortified sugar — Specification**

**EAST AFRICAN COMMUNITY**

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## Foreword

Development of the East African Standard has been necessitated by the need for harmonizing requirements governing quality of products and services in the East African Community. It is envisaged that through harmonized standardization, trade barriers which are encountered when goods and services are exchanged within the Community will be removed.

In order to meet the above objectives, the EAC Partner States have enacted an East African Standardization, Quality Assurance, Metrology and Testing Act, 2006 (EAC SQMT Act, 2006) to make provisions for ensuring standardization, quality assurance, metrology and testing of products produced or originating in a third country and traded in the Community in order to facilitate industrial development and trade as well as helping to protect the health and safety of society and the environment in the Community.

East African Standards are formulated in accordance with the procedures established by the East African Standards Committee. The East African Standards Committee is established under the provisions of Article 4 of the EAC SQMT Act, 2006. The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the private sectors and consumer organizations. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the procedures of the Community.

Article 15(1) of the EAC SQMT Act, 2006 provides that “Within six months of the declaration of an East African Standard, the Partner States shall adopt, without deviation from the approved text of the standard, the East African Standard as a national standard and withdraw any existing national standard with similar scope and purpose”.

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

This second edition DEAS 770:2022 cancels and replaces the first edition, EAS 770:2012, which has been technically revised.

## Introduction

The Health Ministers of the East, Central and Southern Africa (ECSA) Health Community passed a resolution in 2002 directing the Secretariat to work with the countries to fortify commonly consumed foods in the region after recognizing the high levels of malnutrition in the region. ECSA-HC is an intergovernmental organization that fosters cooperation in health among countries in the East, Central and Southern African Region. It has 10 active member states namely Kenya, Uganda, Tanzania, Malawi, Zambia, Zimbabwe, Lesotho, Swaziland, Mauritius and Seychelles. The mandate of the organization is to promote relevance and efficiency in health in the region.

Following initial promotion efforts, the countries identified staple foods suitable for fortification as oil, sugar, maize/meal flour and wheat flour. These foods can be used as vehicles to deliver essential micronutrients to the populations. Based on scientific evidence and working with countries using country data, the Secretariat developed implementation focused guidelines on fortification of these foods to help countries start up programs and scale up the existing programs. These guidelines included fortification levels for addition of micronutrients in sugar.

Based on the guidelines and other available information, most of the countries in the East African Region and in the larger Africa have initiated national programs on oil fortification with vitamin A; and wheat and maize/meal flour fortification with iron, zinc, folic acid, niacin, vitamin B-1, B-2 and B-12, B6 and vitamin A. Sugar fortification with vitamin A has also been considered as a way of supplementing other sources of the vitamin in order to prevent and reduce problems associated with the deficiency of this vitamin. Salt fortification with iodine continues to be implemented in all the countries.

With the increased trade of food commodities including these fortified foods within the region, it has become imperative to develop regional standards that over and above the other standards, stipulate minimum and maximum levels of the added nutrients, provide clauses on how to pack the fortified product and the use of health and nutrition claims. The guidelines developed through ECSA have now been incorporated into food standards to provide for specific fortified products.

It is envisaged that, the adoption of these standards and their utilization within the region will help countries adopt food fortification as a strategy to prevent, alleviate or eliminate micronutrient deficiency in the region. Standards will not only promote the health of the population but will also ensure safety of food products and enhance fair trade.

This standard was developed with support from the East, Central and Southern African Health community (ECSA-HC) Secretariat. This was possible through a grant by the A2Z Project of the United States Agency for International Development (USAID). The financial and technical support was used in the process of formulation of fortification levels, development of the draft standards and mobilization of stakeholders to review the standard in national and regional fora. This support is hereby acknowledged.



## Fortified sugar — Specification

### 1 Scope

This Draft East African Standard specifies the requirements, sampling and test methods of for fortified light brown sugar and fortified brown sugar and fortified plantation (mill) white sugar and fortified refined white sugar intended for human consumption.

This standard does not apply to sugar intended for industrial use.

### 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

AOAC 2001.13, *Vitamin A(Retionol) in Foods. Liquid Chromatography*

EAS 16, *Plantation (mill) white sugar — Specification*

EAS 38, *Labelling of pre-packaged foods — Specification*

EAS 39, *Code of practice for hygiene in the food and drink manufacturing industry*

EAS 749, *Brown sugars — Specification*

EAS 803, *Nutrition labelling — Requirements*

EAS 804, *Claims on foods — Requirements*

EAS 805, *Use of nutritional and health claims — Requirement*

ICUMSA GS 2/3-35, *The Determination of Sulphite in Brown Sugars*

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*

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

ICUMSA Method GS 2/3/9-19, *The Determination of Insoluble Matter in White Sugar by Membrane Filtration*

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

ICUMSA Method GS 9/1/2/3-8, *The Determination of Sugar Solution Colour at pH 7.0 by the MOPS Method*



ISO 21527-2, *Microbiology of food and animal feedstuffs — Horizontal method for the enumeration of yeasts and moulds — Part 2: Colony count technique in products with water activity less than or equal to 0.95*

ISO 4833-1, *Microbiology of the food chain — Horizontal method for the enumeration of microorganisms — Part 1: Colony count at 30 °C by the pour plate technique*

ISO 6579-1, *Microbiology of the food chain — Horizontal method for the detection, enumeration and serotyping of Salmonella — Part 1: Detection of Salmonella spp.*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EAS 5, EAS 16, EAS 749, EAS 1023 and the following apply.

#### 3.1 fortification

as practice of deliberately adding micronutrient(s), that is vitamins and minerals (including trace elements) in a food to improve the nutritional quality of the food and to provide a public health benefit with minimal risk to health.

#### 3.2 fortified sugar

sugar to which essential micronutrients have been added

### 4 Requirements

#### 4.1 Raw materials

- Brown sugar and light brown sugar complying with EAS 749
- Refined white sugar complying with EAS 5
- Plantation (mill) white sugar complying with EAS 16

#### 4.2 General requirements

Fortified sugars shall be

- free-flowing crystals,
- practically free from dirt, foreign and extraneous matter and
- Free from fermented, musty or undesirable odours.

#### 4.3 Specific requirements

Fortified sugars shall conform to the specific quality requirements provided in Table 1.

Table 1 — Specific requirements for fortified sugars

S/N	Characteristic	Requirement				Test method
		Light brown	Brown sugar	Plantation (mill) white	Refined white sugar	
i.	Polarisation, oZ, min.	99.2	99.0	99.5	99.8	ICUMSA

						Method 1/2/3/9-1	GS
ii.	Invert sugar content, % by mass, max.	0.2	0.2	0.1	0.04	ICUMSA Method 2/3/9-5	GS
						ICUMSA Method 2/9-6	GS
iii.	Conductivity ashes, % by mass, max.	0.3	0.3	0.1	0.04	ICUMSA Method 1/3/4/7/8-13	GS
iv.	Moisture content (loss on drying for 3 h at 105 °C ± 2MoC), % by mass, max.	0.15	0.2	0.1	0.1	ICUMSA Method 2/1/3/9-15	GS
v.	Colour, ICUMSA units, max	700	1300	400	60	ICUMSA Method 9/1/2/3-8	GS
vi.	Sulphur dioxide, mg/kg, max.	20	20	20	10	ICUMSA 2/3-35	GS
vii.	Water insoluble matter, mg/kg, max.	250	250	150	60	ICUMSA Method 2/3/9-19	GS
viii.	Copper mg/kg	2	2	2	2	ICUMSA Method 2/3-29	GS

## 5 Fortification requirements

### 5.1 Levels of Vitamin A<sup>1</sup>

The fortified sugar shall conform to the requirements and the levels of vitamin A provided in Table 2.

**Table 2 — Requirements for vitamin A in fortified sugar**

Nutrient	Fortificant compound	Nutrient limits, mg/kg		Test method
		Minimum	Maximum	
Vitamin A	Vitamin A (Retinyl) palmitate	2	15	AOAC 2001.13

<sup>1</sup>Countries may add other micronutrients if available country data indicate deficiency in such nutrients.

### 5.2 Fortificants

Fortificants to be used for sugar fortification shall comply with EAS 1023.

## 6 Food additives

Fortified sugars may contain food additives in accordance with CODEX STAN 192

## 7 Contaminants

### 7.1 Heavy metals

Fortified sugars shall conform to those maximum limits for heavy metals in table 2

**Table 3—Heavy metal limits in fortified sugar**

S/N	Heavy metal	Maximum limit mg/kg	Test method
i.	Arsenic	1	ICUMSA Method GS 2/3/9-25 and ICUMSA Method GS 2/3-23
ii.	Lead	0.5	ICUMSA Method GS 2/1/3-27 and ICUMSA method GS 2/3-23

### 7.2 Pesticide residues

Fortified sugars shall conform to those maximum residue limits established by the Codex Alimentarius Commission for this product.

NOTE Where the use of certain pesticides is prohibited by some Partner States, then it should be notified to all Partner States accordingly.

## 8 Hygiene

Fortified sugar shall be produced, prepared and handled in accordance with EAS 39.

**Table 4 — Microbiological limits for fortified sugars**

Microbiological parameter	Maximum Limits	Test method
Total Plate Count cfu/g, max.	10 <sup>3</sup>	ISO 4833-1
Yeast and moulds, cfu/ g, max.	50	ISO 21527-2
Escherichia coli, cfu/g, max.	absent	ISO 16649-2
Salmonella spp, per 25 g	Absent	ISO 6579-1

## 9 Packaging

Fortified sugars shall be packaged in food grade, non-absorbent materials which do not have adverse effects on the composition of the product including its nutritional value, properties and appearance.

NOTE 1 Packaging materials may be required to meet different regulations in the different destination countries.

## 10 Labelling

### 10.1 General labelling

In addition to the requirements of EAS 38, the following specific provisions shall apply:

- name of the product as “light brown sugar”, “brown sugar”, “plantation (mill) white sugar” “refined white sugar” and any other name from country of origin reflecting nature of the product. The words

'fortified with XXX, where XXX means name of Nutrient shall be declared in close proximity to the name of the sugar;

- b) net contents shall be declared by weight in the metric units ('Système Internationale');
- c) name and physical address of the manufacturer and/or the packer, distributor, importer, exporter or vendor of the product shall be declared;
- d) Country of origin of the product shall be declared;
- e) batch or lot number in code or clear format;
- f) date of manufacture of the sugar, in reference to the date of fortification, in the form 'month and year';
- g) best before date of the sugar, in reference to the date of fortification, in the form 'month and year'; and
- h) instructions on disposal of used package.
- i) storage instructions

Each product unit may also be marked with the national food fortification Logo, where the industry qualifies to use the mark.

## **10.2 Nutrition labelling**

The amount of vitamin A in the fortified sugar shall be declared on the label in accordance with EAS 803.

## **10.3 Nutrition and health claims**

Fortified sugar may have claims on the importance of the vitamin A in nutrition and health. Such claims when declared shall be consistent with EAS 804 and EAS 805.

# **11 Method of sampling**

## **11.1 General requirements**

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

- a) Samples shall be taken in a protected place not exposed to damp air, dust or soot.
- b) The sampling instruments shall be clean and dry when used.
- c) When sampling for microbiological purposes, the sampling instruments and containers for samples shall be sterilized preferably by dry heat at 170 °C for 1 h before use.
- d) Precautions shall be taken to protect the samples, the material being sampled, the sampling instruments and the containers for samples from adventitious contamination.
- e) The samples shall be placed in clean, dry, and moisture-proof containers.
- f) 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.
- g) Samples shall be protected from light as far as practicable and shall be stored in a cool, dry place.

## 11.2 Scale of sampling

**11.2.1** All the packages of the same size, type and style which have been manufactured and packaged under essentially the same conditions in a single consignment shall constitute a lot. Samples shall be tested separately for each lot for ascertaining the conformity of the sugar.

**11.2.2** 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:

$$n = \sqrt{N}$$

**11.2.3** These 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:

**11.2.4** 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  $r^{\text{th}}$  bag thus counted shall be separated until the requisite number of bags is obtained from the lot to give samples for test.

**11.2.5** 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.

## 11.3 Preparation of samples

### 11.3.1 Procedure

From the top, middle and bottom portions of each of the selected bags (see 11.2) 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 11.1(f).

### 11.3.2 Number of tests

The composite sample prepared as under 11.3.1 shall be tested for the characteristics as prescribed in Table 1.

### 11.3.3 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.

DEAS FOR PUBLIC REVIEW