

# DRAFT UGANDA STANDARD

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## Powdered (icing) sugar — Specification

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## Foreword

Uganda National Bureau of Standards (UNBS) is a parastatal under the Ministry of Trade, Industry and Cooperatives established under Cap 327, of the Laws of Uganda, as amended. UNBS is mandated to coordinate the elaboration of standards and is

- (a) a member of International Organisation for Standardisation (ISO) and
- (b) a contact point for the WHO/FAO Codex Alimentarius Commission on Food Standards, and
- (c) the National Enquiry Point on TBT Agreement of the World Trade Organisation (WTO).

The work of preparing Uganda Standards is carried out through Technical Committees. A Technical Committee is established to deliberate on standards in a given field or area and consists of key stakeholders including government, academia, consumer groups, private sector and other interested parties.

Draft Uganda Standards adopted by the Technical Committee are widely circulated to stakeholders and the general public for comments. The committee reviews the comments before recommending the draft standards for approval and declaration as Uganda Standards by the National Standards Council.

The committee responsible for this document Technical Committee UNBS/TC 2, [Food and Agriculture], Subcommittee SC 11, [Sugar, edible starches and related confectionery products].

This second edition cancels and replaces the first edition (US 365:2002), which has been technically revised.

# Powdered (icing) sugar — Specification

## 1 Scope

This Draft Uganda Standard specifies, requirements, method of test and sampling for white powdered (icing) sugar intended for use in toppings, icings and other sugar content bakery products.

## 2 Normative references

The following referenced documents 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

AOAC Official Method 967.26 *Salmonella in Processed Foods Detection*

ICUMSA Method GS 2/3-1, *The Braunschweig Method for the Polarisation of White Sugar by Polarimetry*

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

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

ICUMSA Method GS 2/3-10, *The Determination of White Sugar Solution Colour*

ICUMSA Method GS 2/3-17, *The Determination of Conductivity Ash in Refined Sugar Products*

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

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

US 28, *Code of practice for hygiene in the food and drink manufacturing industry*

US 45, *General standard for food additives*

US 1659, *Materials in contact with food — Requirements for packaging materials*

US CAC/GL 50, *General guidelines on sampling*

US EAS 5, *Refined white sugar — Specification*

US EAS 38, *Labelling of pre-packaged foods — General requirements*

US ISO 2447, *Fruit and vegetable Products — Determination of tin content*

US ISO 6633, *Fruit and vegetables products — Determination of lead content — Flameless atomic absorption spectrometric method*

US ISO 6634, *Fruit, vegetables and derived products — Determination of arsenic content — Silver diethyldithiocarbamate spectrophotometric method*

US ISO 6637, *Fruits, vegetables and derived products — Determination of mercury content — Flameless atomic absorption method*

US ISO 6888-1, *Microbiology of food and animal feeds — Horizontal method for enumeration of Coagulase-positive staphylococci. (Staphylococcus aureus and other species), Detection and MPN technique for low numbers*

US ISO 21527-2, *Microbiology of food and animal feeding stuffs — 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*

US 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*

US ISO 4831, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection and enumeration of coliforms — Most probable number technique*

### 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

#### 3.1

##### **Powdered (icing) sugar**

finely pulverised refined white sugar with or without the addition of an anticaking agent

### 4 Quality Factors

#### 4.1 General quality requirements

Powdered (icing) sugar shall be;

- a) Processed from refined white sugar that conforms with US EAS 5
- b) micro-crystalline free-flowing powder;
- c) white in colour;
- d) free from dirt or other extraneous matter; and
- e) free from foreign odour and taste

#### 4.2 Physical and chemical characteristics

The product shall conform to the requirements in Table 1.

**Table 1— Physical and chemical characteristics for powdered (Icing) sugar**

S/N	Composition and quality factor	Limit	Test methods
i)	Polarisation, °Z, min.	99.7	ICUMSA Method GS 2/3-1
ii)	Invert Sugar content, % by mass, max.	0.04	ICUMSA Method GS 2/3/9-5 ICUMSA Method GS 2/9-6
iii)	Starch content, % by mass, max.	5	ICUMSA Method GS 2/9-6,
iv)	Conductivity ash, % by mass, max.	0.04	ICUMSA Method GS 2/3-17

v)	Loss on drying, (3 hours at 105 °C), %, by mass, max.	0.05	ICUMSA Method GS 2/1/3/9-15
Vi)	Colour (ICUMSA units), max.	60	ICUMSA Method GS 2/3-10
vii)	Impurity undissolved in water, mg/kg, max.	30	ICUMSA Method GS 2/3-19

## 5 Food Additives

**5.1** The additives used shall be in accordance with US 45, The maximum permitted sulphur dioxide level shall be 15 mg/kg.

### 5.2 Anticaking agents

The following anticaking agents are permitted for use in powdered white (Icing) sugar to a maximum level of 1.5% by m/m), singly or in combination, provided that starch is not present:

- a) calcium phosphate, tribasic
- b) magnesium carbonate
- c) magnesium stearate
- d) silicon dioxide, amorphous (dehydrated silica gel)
- e) calcium silicate
- f) magnesium trisilicate
- g) sodium calcium aluminosilicate

## 6 Contaminants

### 6.1 Heavy metals

The maximum permitted levels for heavy metals are set out below as in Table 2:

**Table 2 — Maximum levels of the heavy metal limits**

S/N	Heavy metal	Limit (maximum)	Test methods
i)	Arsenic (As)	1 mg/kg	US ISO 6634
ii)	Copper (Cu)	2 mg/kg	US ISO 2447
iii)	Lead (Pb)	0.5 mg/kg	US ISO 6633
iv)	Mercury (Hg)	0.05 mg/kg	US ISO 6637

### 6.2 Pesticide Residues

The product shall comply with those maximum residue limits established by the FAO/WHO Codex Committee on Pesticide Residues.

## 7 Hygiene

The product covered by the provisions of this standard shall be prepared in accordance with the appropriate sections of US 28.

### 7.2 Specific requirements

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

**Table 3 — Maximum microbial levels in powdered (icing) sugar**

S/N	Microbiological parameter	Limit	Test Methods
i)	Total Plate Count (mesophilic), CFU/g, max.	10 <sup>3</sup>	US ISO 4833-1
vi)	Yeast and moulds, CFU/g, max.	50	US ISO 21527-2
vii)	Total coliform, MPN/g	<1	US ISO 4831
viii)	Salmonella, per g	negative	AOAC 967:26
v)	Staphylococcus aureus, per g	absent	US ISO 6888-1

## 8 Packaging

The packaging material used shall be new, clean and shall protect the powdered icing sugar from contamination and wetting. The packing material shall be food grade and comply with US 1659:2017.

## 9 Labelling

In addition to the relevant sections of the Uganda Standard Specification for the labelling of pre-packaged Foods US EAS 38, the following specific provisions shall apply:-

- a) The name of the product "powdered (icing) sugar"
- b) List of ingredients
- c) Net contents: The net contents shall be declared by weight in metric units ('system international')
- d) Name and Address of the manufacturer, packer, distributor, importer, exporter or vendor of the product shall be declared.
- e) Country of Origin
- f) Lot /batch identification;
- g) Shelf life: best before/use by date;
- h) Statement 'Food for Human Consumption' shall appear on the package;
- i) Storage conditions as "Store in a cool dry place away from contaminants"
- j) Instructions on disposal of used package;
- k) Each container may also be marked with a Certification Mark
- l) Packing date.



- m) Instruction for use
- n) Declaration the use of Sulphur dioxide

## 10 Sampling

Sampling shall be carried out in accordance with US CAC/GL 50.

### 10.1 Method of Analysis

From a given lot a sample of packages shall be randomly selected as per Table 4.

**Table 4 — Given lots of samples per the number of selected packages**

Table 1 Lot Size	Number of Packages to be selected
Up to 100	4
101 to 500	5
501 to 1000	7
1001 to above	10

### 10.2 Preparation of Test Samples

The contents of the packages selected as per 10.2 shall be thoroughly mixed, and by a process of quartering the sample shall be reduced to about 500 g for testing.

The test sample shall be immediately transferred to a tightly closed, moisture proof container for testing purpose.

### 10.3 Determination of Polarization

According to the ICUMSA method (ICUMSA methods of Sugar Analysis, 1979, p23 and p182). Results shall be expressed in degrees Sugar, °Z.

### 10.4 Determination of Invert Sugar content

According to the Berlin Institute method (ICUMSA methods of Sugar Analysis, 1979, p55) Results shall be expressed as % m/m invert sugar.

### 10.5 Determination of Conductivity Ash

According to the Codex Alimentarius Methods of Analysis for sugars, CAC/RMS - 1969 or according to the official conductivity ash determination method (ICUMSA Methods of Sugar Analysis, 1979, p85). Results shall be expressed as % m/m Conductivity Ash.

### 10.6 Determination of Loss on Drying

According to the Method of the British National Committee of ICUMSA is applicable to white sugar (ICUMSA methods of sugar analysis, 1979, p113). Results shall be expressed as % m/m loss on drying.

### **10.7 Determination of Colour**

The visual appearance of plantation (mill) sugar shall be determined according to the Codex Alimentarius methods of Analysis for sugars, CAC/RM 6 or according to the ICUMSA method (ICUMSA Methods of Sugar Analysis 1979, p125) or by the photoelectric reflectant method and shall meet requirements of Clause 4.5

### **10.8 Determination of Sulphur dioxide**

According to the method of Carruthers, Heaney and Oldfield which is based on the calorimetric determination of SO<sub>2</sub> and is applicable to white sugars (ICUMSA Methods of Sugar Analysis 1979, p98). Results shall be expressed as Mg, SO<sub>2</sub>/kg.

### **10.9 Determination of Arsenic**

According to the calorimetric (silver diethyldithiocarbamate) method of the Association of Official Analytical Chemists, Official Methods - AOAC, 1990 952.13 or According to the ICUMSA method (ICUMSA methods of Sugar Analysis 1979, p100). Results shall be expressed as mg, Arsenic/kg.

### **10.10 Determination of Copper**

According to AOAC (1990) 971.20 or the ICUMSA method (ICUMSA methods of Sugar Analysis 1979, p90). Results shall be expressed as mg, copper/kg.

### **10.11 Determination of Lead**

According to the ICUMSA 'wet ashing' method (ICUMSA methods of Sugar Analysis, 1979, p91). Results shall be expressed as mg lead/kg.

### **10.12 Determination of Pesticide Residues**

The pesticide residues shall be determined according to AOAC methods of analysis for pesticides. (970.52, 985.22, and 970.53 of 1990).

## Bibliography

- [1] CODEX STAN 212: 1999, Codex standards for sugars.
- [2] KS 05 –38:1977 (Second revision 1986) Kenya standards specification for white sugar
- [3] US 365:2002 Specification for powdered (icing) sugar

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