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## Dried tomatoes — Specification

PUBLIC REVIEW DRAFT FOR COMMENTS



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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 is Technical Committee UNBS/TC 204, Fruits, vegetables, tubers and processed products.

PUBLIC REVIEW DRAFT FOR COMMENTS

# Dried tomatoes — Specification

## 1 Scope

This Uganda Standard specifies requirements, test methods and sampling for dried tomatoes of varieties (cultivars) grown from *Lycopersicon esculentum* Mill. and its hybrids, intended for direct consumption without further processing or for use in the food industry.

## 2 Normative references

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.

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

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

US 45, *General General standard for food additives*

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 EAS 803, *Nutrition labelling - Requirements*

US EAS 805, *Use of nutrition and health claims - Requirements*

US 640, *Dried fruits and vegetables -Code of practice for production, handling and processing*

US 738, *General standard for contaminants and toxins in food and feed*

US ISO 7251, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection and enumeration of presumptive Escherichia coli — Most probable number technique*

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*

## 3 Terms and definitions

For the purpose of this standard, the following term and definition shall apply.

### **dried tomatoes**

product:

- a) prepared from varieties characteristic of the named vegetable; and
- b) processed by drying either by the sun or by other recognized methods of dehydration with or without added food additives, into a form of marketable dried product as per clause 4.2.1

## **4 Requirements**

### **4.1 Ingredients**

#### **4.1.1 Basic ingredients**

Tomatoes to be used shall be fresh, clean and at appropriate level of maturity conforming to the characteristics of the tomatoes and of a quality suitable for human consumption.

#### **4.1.2 Optional ingredients**

Other edible material such as spices and condiments may be added to the product provided it is suitable for consumption. The edible material shall conform to relevant standards.

### **4.2 General quality requirements**

#### **4.2.1 Presentation**

Dried tomatoes may be presented as follows:

- a) whole;
- b) halves, cut in two equal parts along the longitudinal axis;
- c) julienne strips, that are approximately 6 mm to 7 mm wide and length typical of dried tomatoes;
- d) double diced, random pieces which are approximately 12 mm to 25 mm in length;
- e) triple diced, random pieces which are approximately 6 mm to 12 mm in length;
- f) finely diced, random pieces which are approximately 3 mm to 6 mm in length (irregular cubes);
- g) ultra finely diced, a granular form of dried tomatoes, 1.5 mm to 3 mm in length;
- h) powder; and
- i) other sufficiently distinctive styles or forms of presentation.

The contents of each package shall be uniform and contain only dried tomatoes of the same origin, quality and size (if sized). The visible part of the contents of the package shall be representative of its entire contents.

#### **4.2.2 Physical appearance**

When examined visually dried tomatoes shall be

- a) free from damage caused by pests
- b) free from presence insect excreta and their body parts intact (only for wholes and halves); except for edges that are slightly torn, slight superficial damage and slight scratches,
- c) free from rot or deterioration that may make it unfit for consumption,
- d) free from blemishes, areas of discolouration or spread stains in pronounced contrast with the rest of the produce affecting an aggregate not more than 5 % of the surface of the produce, and
- e) free of abnormal external moisture.

#### 4.2.3 Colour, odour and flavour

Dried tomatoes shall have their characteristics colour, odour and flavour. They shall be free from off-odour, off-flavour and foreign taste including rancidity and mustiness. Dried tomatoes shall be free of fermentation.

NOTE Dried tomatoes may be sulphured in order to retain their original colour. A slight smell of sulphur dioxide (SO<sub>2</sub>) is not considered as “abnormal”.

#### 4.2.4 Moulds and insects

Dried tomatoes shall be free from mould filaments and insect infestation, including the presence of dead insects and/or mites, their debris or excreta, when examined visually.

#### 4.2.5 Extraneous matter

Dried tomatoes shall be practically free from extraneous matter including soil particles and loose stalks, when examined visually.

### 4.3 Moisture content

When examined in accordance with the method in Annex A, the dried tomatoes shall have different moisture contents as indicated in Table 1. The texture of the dried tomatoes shall vary according to the moisture content as indicated in Table1.

**Table 1 — Moisture content limits for dried tomatoes**

Moisture designation	Moisture of dried tomatoes		Texture
	Minimum percentage	Maximum percentage	
High moisture	25	50	Soft and pliable
Regular moisture	18	25	Firm but pliable
Reduced moisture	12	18	Very firm
Low moisture	6	12	Hard and brittle
	N/A	12	Fine/coarse powder

Dried tomatoes treated with preservatives or preserved by other means (for example, pasteurization) may have moisture content between 25 % and 50 %.

### 4.4 Classification

Dried tomatoes may be classified into classes in accordance with the tolerances for defects as indicated in Table 2. The defects allowed shall not affect the general appearance of the produce as regards quality, keeping quality and presentation in the package.

**Table 2 — Tolerance for defects**

Defects allowed	Tolerances allowed, percentage of defective dry tomatoes by weight		
	Extra	Class I	Class II
(a) Tolerances for dried tomatoes not satisfying the minimum requirements, of which no more than:	5	10	15
Fermentation, decay, mould or damage by pests, of which not more than	1	2	3
Mould	0.5	1	1
Fermentation	0.5	1	1
Mechanical injury, tears, calluses and scars, for wholes and halves	2	3	5
Blemishes and discolouration, for wholes and halves	4	6	9
Dirty fruit	0	0.5	1
Soft (low moisture produce), scars, blisters and other superficial defects (excluding abscissa of tomato)	1	2	3
(b) Size tolerances			
For produce not conforming to the size indicated, if sized	10	10	10
(c) Tolerance for other defects			
Foreign material and extra vegetable matter (leaves, wood, sticks and stem)	0.5	1	1.5
Living pests	0	0	0

## 6 Food additives

Food additives such as preservatives and nutritive carbohydrates may be used in accordance with US 45.

## 7 Contaminants

Dried tomatoes shall conform to the tolerance limits for contaminants in US 738.

Dried tomatoes shall comply with those maximum residue limits for pesticides established by the Codex Alimentarius Commission for this commodity.

## 8 Hygiene

Dried tomatoes shall be produced and handled in accordance with US EAS 39 or US 640 .The products shall conform to the requirements for microbiological limits in Table 3.



**Table 3 — Requirements for microbiological limits in dried tomatoes**

Microbiological parameter, cfu/g	Required limit	Method of test
Total plate count, max.	50,000	US ISO 4833-1
<i>Escherichia coli</i> , max.	<1	US ISO 7251
Yeast and moulds, max.	1 000	US ISO 21527-2

## 9 Packaging

Dried tomatoes shall be packaged in clean food grade containers, made of a material which does not affect the products and which protects it from moisture, and from loss of volatile matter.

The container shall protect the product from any form of contamination.

## 10 Weights and measures

Containers shall be as full as practicable without impairment of quality and shall be consistent with a proper declaration of contents for the product.

## 11 Labelling

Dried tomatoes shall be labelled in accordance with the requirements of US EAS 38. In addition the following specific provisions shall apply:

- a) The name of the product as declared on the label shall be "Dried tomatoes".
- b) The presentation "Whole", "Halves", "Julienne strips", "Double diced", "Triple diced", "Finely diced", "Ultra finely diced", or other cuts and powder shall appear on the label as part of the name or in close proximity to the name.
- c) The class and the moisture category shall be declared on the label.

Nutritional labelling, nutrition and health claims may be made in accordance with US EAS 803 or US EAS 805.

## 12 Sampling

Representative samples of the material shall be drawn and tested for conformity to this specification as prescribed in Annex B.

## Annex A (normative)

### Determination of the moisture content for dried tomatoes

NOTE This method is the same as that prescribed by the AOAC: Official Methods of Analysis, XIIIth edition, 1980, 22.013 - *Moisture in Dried fruits and vegetables*, Official Final Action.

#### A.1 Definition

The moisture content of dried tomatoes is defined as being the loss of mass determined under the experimental conditions described in this annex.

#### A.2 Principle

The principle of the method is the heating and drying of a sample of dried fruit at a temperature of 70 °C + 1 °C at a pressure not exceeding 100 mm Hg.

#### A.3 Apparatus

Usual laboratory apparatus is used together with the following items:

- a) **Electrically heated constant-temperature oven**, capable of being controlled at 70 °C + 1 °C at a pressure of 100 mm Hg
- b) **Dishes with lids**, of corrosion-resistant metal of about 8.5 cm in diameter
- c) **Mincer**, either hand or mechanically operated
- d) **Desiccator**, containing an effective desiccant
- e) **Precision balance**

#### A.4 Procedure

##### A.4.1 Preparation of the sample

Take approximately 50 g of dried fruit from the laboratory sample, and mince it twice with the mincer.

##### A.4.2 Test portion

Place 2 g of finely divided asbestos into the dish, tare the dish with its lid and the asbestos, dried beforehand. Weigh, to the nearest 0.01 g about 5 g of prepared sample.

NOTE Dried sand which has previously been washed in hydrochloric acid and then rinsed thoroughly with water may be used in the place of the asbestos. Analysts using this technique should note that it is a deviation from the AOAC procedure, and should mention this in their report.

### A.4.3 Determination

Moisten the sample and the asbestos thoroughly with a few millilitres of hot water. Mix the sample and the asbestos together with a spatula. Wash the spatula with hot water to remove the sample residues from it, letting the residues and the water fall into the dish.

Heat the open dish on a boiling-water bath (Bain-marie) to evaporate the water to dryness. Then place the dish, with the lid alongside it, in the oven and continue drying for six hours at 70 °C under a pressure not exceeding 100 mm Hg, during which time the oven should not be opened. During drying admit a slow current of air (about two bubbles per second) to the oven, the air having been dried by passing through H<sub>2</sub>SO<sub>4</sub>. The metal dish must be placed in direct contact with the metal shelf of the oven. After drying, remove the dish, cover it immediately with its lid and place it in the desiccator. After cooling to ambient temperature, weigh the covered dish to the nearest 0.01 g.

### A.5 Calculation and expression of results

The moisture content of the sample, as percentage by mass is calculated as follows:

$$\text{Moisture content} = 100 \times (M_1 - M_2 / M_1 - M_0)$$

where

$M_0$  is the mass, in grams, of the empty dish with its lid and containing the asbestos,

$M_1$  is the mass, in grams, of the dish with its lid, asbestos and test portion before drying, and

$M_2$  is the mass, in grams, of the dish with its lid after drying.

The results are expressed to one decimal place.

Duplicate determinations should agree to 0.2 % moisture.

## **Annex B** (informative)

### **Sampling of tomatoes**

#### **B.1 Definitions**

##### **B.1.1**

###### **package**

individually packaged part of a lot, including contents so as to facilitate handling and transport of a number of sales units or of products loose or arranged, in order to prevent damage by physical handling and transport. Road, rail, ship and air containers are not considered as packages.

##### **B.1.2**

###### **sales package**

individually packaged part of a lot, including contents, which is so as to constitute a sales unit to the final user or consumer at the point of purchase

##### **B.1.3**

###### **pre-packages**

sales packages such as the packaging encloses the foodstuff completely or only partially, but in such a way that the contents cannot be altered without opening or changing the packaging. Protective films covering single product are not considered as a pre-package.

##### **B.1.4**

###### **consignment**

quantity of product to be sold by a given trader found at the time of inspection and defined by a document. A consignment may consist of one or several types of product; it may contain one or several lots of dried fruit.

##### **B.1.5**

###### **lot**

quantity of product which, at the time of inspection at one place, has similar characteristics with regard to:

- a) packer and/or dispatcher;
- b) country of origin;
- c) nature of product;
- d) class of product;
- e) size (if the product is graded according to size);
- f) variety or commercial type (according to the relevant provisions of the standard); and
- g) type of packaging and presentation.

If it is difficult to distinguish between different lots and/or presentation of individual lots, all lots of a specific consignment may be treated as one lot if they are similar in regard to type of product, dispatcher, country of origin, class and variety or commercial type, if this is provided for in the relevant marketing standard.

**B.1.6****sampling**

collective samples taken temporarily from a lot during conformity check

**B.1.6.1****primary sample**

package taken at random from the lot, in case of packed product or, in case of bulk product (direct loading into a transport vehicle or compartment thereof), a quantity taken at random from a point in the lot.

**B.1.6.2****bulk sample**

several primary samples supposed to be representative for the lot so that the total quantity is sufficient to allow the assessment of the lot with regard to all criteria

**B.1.6.3****secondary sample**

equal quantity of product taken at random from the primary sample

The secondary sample shall comprise 30 units, in case the net weight of the package is 25 kg or less and the package does not contain any sales packages. In certain cases this means that the whole content of the package has to be checked, if the primary sample contains not more than 30 units.

**B.1.6.4****composite sample**

mix, weighing at least 3 kg, of all the secondary samples taken from the bulk sample. Product in the composite sample shall be evenly mixed.

**B.1.6.5****reduced sample**

quantity of product taken at random from the bulk or composite sample whose size is restricted to the minimum quantity necessary but sufficient to allow the assessment of certain individual criteria.

If the inspection method would destroy the product, the size of the reduced sample shall not exceed 10 % of the bulk sample. In the case of small dry or dried products (that is, 100 g include more than 100 units) the reduced sample shall not exceed 300 g.

Several reduced samples may be taken from a bulk or composite sample in order to check the conformity of the lot against different criteria.

**B.2 Sampling method****B.2.1 Identification of lots and/or getting a general impression of the consignment**

The identification of lots shall be carried out on the basis of their marking or other criteria. In the case of consignments which are made up of several lots it is necessary for the inspector to get a general impression of the consignment with the aid of accompanying documents or declarations concerning the consignments. The inspector shall then determine how far the lots presented comply with the information in these documents.

If the product is to be or has been loaded onto a means of transport, the registration number of the latter shall be used for identification of the consignment.

## B.2.2 Presentation of product

The inspector shall decide which packages are to be checked. The presentation shall be made by the operator and shall include the presentation of the bulk sample as well as the supply of all information necessary for the identification of the consignment or lot.

If reduced or secondary samples are required, these shall be identified by the inspector from the bulk sample.

The inspector shall determine the size of the bulk sample in such way as to be able to assess the lot. The inspector selects at random the packages to be inspected or in the case of bulk product the points of the lot from which individual samples shall be taken.

Care shall be taken to ensure that the removal of samples does not adversely affect the quality of the product.

Damaged packages shall not be used as part of the bulk sample. They shall be set aside and may, if necessary, be subject to a separate examination and report.

The bulk sample shall comprise the following minimum quantities whenever a lot is declared unsatisfactory or the risk of a product not conforming to the standard has to be examined:

Number of packages in the lot	Number of packages to be taken (primary samples)
Packaged products	
Up to 100	5
From 101 to 300	7
From 301 to 500	9
From 501 to 1 000	10
More than 1 000	15 (minimum)
Product in bulk	
Quantity of lot in kg or number of bundles in the lot	Quantity of primary samples in kg or number of bundles
Up to 200	10
From 201 to 500	20
From 501 to 1 000	30
From 1 001 to 5 000	60
More than 5 000	100 (minimum)

In the case of bulky dried fruit and vegetables (over 2 kg per unit), the primary samples shall be made up of at least five units. In the case of lots comprising fewer than five packages or weighing less than 10 kg, the check shall cover the entire lot.

If the inspector discovers, after an inspection, that a decision cannot be reached, another physical check shall be undertaken and the overall result reported as an average of the two checks.

## B.2.3 Control of product

In case of packed product, the primary samples shall be used to check the general appearance of the product, the presentation, the cleanliness of the packages and the labelling. In all other cases, these checks shall be done on basis of the lot or transport vehicle.

The product shall be removed entirely from its packaging for the conformity check. The inspector may only dispense with this where the sampling is based on composite samples.

The inspection of uniformity, minimum requirements, quality classes and size shall be carried out on the basis of the bulk sample, or on the basis of the composite sample.

When defects are detected, the inspector shall ascertain the respective percentage of the product not in conformity with the standard by number or weight.

External defects shall be checked on the basis of the bulk or composite sample. Certain criteria on the degree of development and/or ripeness or on the presence or absence of internal defects may be checked on the basis of reduced samples. The check based on the reduced sample applies in particular to checks which destroy the trade value of the product.

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## Bibliography

- [1] US 890: 2011, Dried tomatoes — Specification



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