



## DRAFT TANZANIA STANDARD

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### Fresh watermelon - Specification

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TANZANIA BUREAU OF STANDARD

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## 0. Foreword

Watermelon (*Citrullus lanatus*) is a tropical annual crop belonging to the family Cucurbitaceae cultivated for its fruits. Watermelon varieties are grouped into seeded and seedless. The fruits vary in sizes, shapes, rind patterns and flesh colors depending on the variety. They contain significant amount of minerals (Mg, K) and antioxidants including vitamins A and C.

This Tanzania Standard was prepared to provide guidance to producers, traders of fresh watermelon and regulators to act as a means for ensuring the safety and quality of the produces.

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

UNECE STANDARD FFV-37:2017, *Marketing and commercial quality control of watermelons*

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 standard specifies the requirements, methods of sampling and test of watermelons of varieties (cultivars) grown from *Citrullus lanatus* to be supplied fresh to the consumer, watermelons for industrial processing being excluded.

## 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.

- a) TZS 4, *Rounding off numerical values*
- b) TZS 109, *General principles of food hygiene -Code of practice*
- c) TZS 122, *Microbiology of food and feeding stuffs - Horizontal method for detection of Salmonella spp.*
- d) TZS 131, *Microbiology of food and animal feeding stuff - General guidance for enumeration of yeasts and moulds - Colony count technique at 25°C*
- e) TZS 538, *Pre -packaged food labeling - general requirements*

- f) *TZS 729, Microbiology of food and animal feeding stuffs -Horizontal method for the enumeration of coliforms - Colony count technique*
- g) *TZS 730-2, Microbiology of food and animal feeding stuffs - Horizontal method for the enumeration of -b-glucuronidase-positive Escheria coli - Part 2 - Colony-count technique at 44 °C using 5-bromo-4-chloro-3-indolyl-b-D-glucuronide*
- h) *TZS 852-1 Microbiology of food and animal feeding stuffs - Horizontal method for the detection and enumeration of Listeria monocytogenes - Part 1 - Detection method*
- i) *TZS 1002, Fresh fruits and vegetables - Sampling*
- j) *TZS 1003 Guide to the prepacking of fruits and vegetables*
- k) *TZS 1743 National standard for good agricultural practices (GAP) and good handling practices for fresh fruits and vegetables*
- l) *Codex stan 193 General Standard for Contaminants and Toxins in Food and Feed*
- m) *Codex pesticide residues in food online data base*

### **3. Terms and definitions**

For the purpose of this standard the following terms and definitions apply.

#### **3.1 mature**

fruit has reached the stage of development at which the flesh is at least fairly sweet and shows characteristic and colour of a mature watermelon for the variety.

#### **3.2 seedless**

are watermelons which have 10 or less mature seeds, not to include pips/caplets, on the face of the melon which has been cut into four equal sections (one lengthwise cut and one crosswise cut)

#### **3.3 seeded**

are watermelons which have more than 10 mature seeds, not to include pips/caplets, on the face of the melon which has been cut into four equal sections (one lengthwise cut and one crosswise cut)

#### **3.4 damage**

any defect, or combination of defects which materially detracts from the appearance, or the edible or marketing quality of the watermelons .

#### **3.5 sound**

produce not affected by rotting or deterioration such as to make it unfit for consumption

#### **3.6 clean**

practically free of any visible foreign matter

#### **3.7 intact**

no part (s) removed and have not suffered any damage

### **3.8 firm**

neither soft nor shrivelled

### **3.9 split**

development of cracks

### **3.10 abnormal external moisture**

excess water on the surface of fruits caused by a natural agent (for example rain) or due to an artificial treatment (for example washing)

## **4 Requirements**

### **4.1 General requirements**

**4.1.1** In all classes, subject to the special provisions for each class and the tolerances allowed, the watermelons shall be:

- intact;
- sound;
- clean;
- firm;
- not split;
- practically free from pests and damage caused by them;
- free of abnormal external moisture; and
- free of any foreign smell and/or taste.

**4.1.2** The development and condition of the watermelons shall be such as to enable them:

- a) to withstand transport and handling, and
- b) to arrive in satisfactory condition at the place of destination.

### **4.2 Specific requirements**

#### **4.2.1 Minimum maturity requirements**

The watermelons shall be sufficiently developed and display satisfactory ripeness. The colour and taste of the flesh should conform to a sufficient state of ripeness of the variety.

In order to satisfy this requirement, the refractometric index of the pulp measured at the middle point of the fruit flesh at the equatorial section shall be greater than or equal to 8° Brix.

#### **4.2.2 Classification**

The watermelons are classified in three classes defined as below:

#### **4.2.2.1 "Extra" Class**

Watermelons in this class shall be of superior quality. They shall be characteristic of the variety. The stem of the watermelon shall not exceed 5 cm in length. They shall be free from defects, except for very slight superficial defects, provided they do not affect the general appearance of the produce, the quality, the keeping quality and presentation in the package. A pale colouring of the watermelon fruit which has been in contact with the ground during the period of growth is not regarded as a defect.

#### **4.2.2.2 Class I**

Watermelons in this class shall be of good quality. They shall be characteristic of the variety. The stem of the watermelon shall not exceed 5 cm in length.

The following slight defects, however, may be allowed provided these do not affect the general appearance of the produce, the quality, the keeping quality and presentation in the package:

- a) a slight defect in shape;
- b) a slight defect in colouring of the rind; a pale colouring of the watermelon which has been in contact with the ground during the period of growth is not regarded as a defect;
- c) slight healed superficial cracks
- d) slight skin defects due to rubbing or handling of which the total area affected shall not exceed one-sixteenth of the surface of the fruit.

#### **4.2.2.3 Class II**

This class includes watermelons which do not satisfy for inclusion in the higher Classes, but satisfy the general requirements specified above.

The following defects may be allowed provided the watermelons retain their essential characteristics as regards the quality, the keeping quality, and presentation:

- a) defects in shape;
- b) defects in colouring of the rind; a pale colouring of the watermelon which has been in contact with the ground during the period of growth is not regarded as a defect;
- c) healed superficial cracks;
- d) skin defects due to rubbing or handling or damage by pests or diseases of which the total area affected shall not exceed one-eighth of the surface of the fruit; and
- e) slight bruising.

#### **4.2.3 Sizing**

Size is determined by the weight per unit.

To ensure uniformity in size, the range in size between produce in the same package shall not exceed 2 kg or 3.5 kg if the lightest unit exceeds 6 kg. This uniformity in weight is not compulsory for watermelons presented in bulk in pallet boxes/bins or in the transport vehicle.

#### **4.2.4 Tolerances**

Tolerances in respect of quality and size shall be allowed in each package, or in each lot for produce presented in bulk, for produce not satisfying the requirements of the class indicated.

##### **4.2.4.1 Quality tolerances**

###### **4.2.4.1.1 “Extra” Class**

A total tolerance of 5 percent, by number or weight, of watermelons not satisfying the requirements of the class but meeting those of Class I is allowed. Within this tolerance not more than 0.5 per cent in total may consist of produce satisfying the requirements of Class II quality.

###### **4.2.4.1.2 Class I**

A total tolerance of 10 percent, by number or weight, of watermelons not satisfying the requirements of the class but meeting those of Class II is allowed. Within this tolerance not more than 1 per cent in total may consist of produce satisfying neither the requirements of Class II quality nor the general requirements, or of produce affected by decay.

###### **4.2.4.1.3 Class II**

A total tolerance of 10 percent, by number or weight, of watermelons satisfying neither the requirements of the class nor the general requirements are allowed. Within this tolerance not more than 2 per cent in total may consist of produce affected by decay.

##### **4.2.4.2 Size tolerances**

For all classes (if sized): a total tolerance of 10 percent, by number or weight, of watermelons not satisfying the requirements as regards sizing is allowed.

#### **4.2.5 Presentation**

##### **4.2.5.1 Uniformity**

The contents of each package (or lot for produce presented in bulk in the transport vehicle) shall be uniform and contain only watermelons of the same origin, variety, quality and size (if sized). In addition, in Classes “Extra” and I, the shape and colour

of the rind of the watermelons shall be uniform. The visible part of the contents of the package (or lot for produce presented in bulk in the transport vehicle) shall be representative of the entire contents.

## **6 Hygiene**

**6.1** It is recommended that the produce covered by the provisions of TZS 109 and TZS 1743 (see clause 2).

**6.2** Watermelons shall also comply with the microbiological requirements specified in Table 1.

**Table 1 - Microbiological requirements for watermelons**

| <b>Characteristic</b>              | <b>Requirement</b> | <b>Test method</b> |
|------------------------------------|--------------------|--------------------|
| Coliforms cfu/g, max               | 10 <sup>2</sup>    | TZS 729            |
| <i>Escherichia coli</i> , cfu/g .  | Absent             | TZS 730-2          |
| <i>Salmonella spp</i> /25 g        | Absent             | TZS 122            |
| Yeast and moulds, cfu/g, max       | 10 <sup>2</sup>    | TZS 131            |
| <i>Listeria monocytogenes</i> /25g | Absent             | TZS 852-1          |

## **7 Contaminants**

### **7.1 Heavy metals**

Watermelons shall comply with the maximum levels of metal contaminants established by the Codex Stan 193.

### **7.2 Pesticide residues**

Watermelons shall comply with those maximum residue limits established in the Codex pesticide residues in food online data base.

## **8 Sampling and tests**

### **8.1 Sampling**

Representative samples of the produce shall be drawn as prescribed in TZS 1002 (see clause 2).

### **8.2 Tests**

Tests shall be done in accordance with the methods referred in this standard.

## **9. Packing, marking and labelling**

The produce shall also be packed in accordance with TZS 1003 (See clause 2).

## **9.1 Packing**

The watermelons shall be packed in such a way as to protect the produce properly. The materials used inside the package, shall be new, clean and of a quality such as to avoid causing any external or internal damage to the produce. The use of materials particularly paper or stamps, bearing trade specifications is allowed provided the printing or labelling has been done with non-toxic ink or glue.

Stickers individually affixed to the produce shall be such that, when removed, they neither leave visible traces of glue nor lead to skin defects. Information lasered on single fruit should not lead to flesh or skin defects.

Packages (or lots for produce presented in bulk in the transport vehicle) shall be free of all foreign matter.

Watermelons transported in bulk in the transport vehicle shall be separated from the floor and walls of the vehicles by a suitable protective material, which shall be new and clean and not liable to transfer any abnormal taste or smell to the fruit.

**9.1.1** The containers shall meet the quality, hygiene, ventilation and resistance characteristics that shall ensure suitable handling, shipping and preserving the produce. Packages (or lot for produce presented in bulk) shall be free of foreign matter and objectionable smell.

**9.1.2** The use of any substance tending to modify the natural characteristics of the produce, especially form, texture and taste shall be prohibited.

## **9.2 Marking and labelling**

**9.2.1** In addition to the requirements of the TZS 538; each package shall legibly and indelibly bear the following information:

- a) Name of the produce 'water melons'
- b) Name and address of exporter/importer, packer and/or dispatcher;
- c) Country of origin;
- d) Class;
- e) Identification code and/or batch number;
- f) Storage instructions;
- g) Pack date;
- h) Name of the variety (optional)
- i) Net weight or number of units
- j) Colour of flesh (if not red)
- k) "Seedless", where appropriate.
- l) Size (if sized) expressed in minimum and maximum weight



Certification mark – Each container may also be marked with TBS certification mark.

**NOTE:** The use of TBS certification mark is governed by provisions of the Standards Act, 2009. Details of the conditions under which a license for the use of TBS certification mark may be granted to manufacturers or producers, may be obtained from TBS.

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