



DRAFT TANZANIA STANDARD

Citrus fruits — Specification

DRAFT FOR STAKEHOLDERS' COMMENTS

0 Foreword

Citrus are one of the important fruits produced in Tanzania, both for local and export markets, valued for their vitamin C content.

Development of this Tanzania Standard was necessitated by the need for ensuring the production of safe and good quality citrus fruits in Tanzania for local and export market.

This third edition cancels and replaces the second edition (TZS 998: 2016) which has been technically revised.

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

EAS 330: 2002, *Citrus fruits — Specification*, published by the East African Community.

UNECE STANDARD FFV-14: 2010 — *Citrus fruit*, published by the United Nations.

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 Tanzania Standard prescribes requirements, methods of sampling and test for fresh citrus fruits for human consumption.

This Tanzania Standard applies to the following citrus fruits:

- a) Cultivated fruits of the species *Citrus sinensis*: Oranges
- b) Cultivated fruits of the species *Citrus reticulata*: Mandarins (tangerines)
- c) Cultivated fruits of the species *Citrus paradisi*: Grapefruit
- d) Cultivated fruits of the species *Citrus limon*: Lemons
- e) Cultivated fruits of the species *Citrus aurantifolia*: Limes

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.

TZS 4, *Rounding off of Numerical Values*

TZS 109, *Hygienic practices in food processing unit - General*

TZS 538, *Packaging and labelling of foods*

TZS 1002, *Fresh fruits and vegetables – Sampling*

TZS 1003, *Guide to the prepackaging of fresh fruits and vegetables*

TZS 1488/ ISO 750: 1998, *Fruit and vegetable products - Determination of titratable acidity*

TZS 1496/- ISO 2173: 2003, *Fruit and vegetable products - Determination of soluble solids— Refractometric method*

3 Terms and definitions

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

3.1 citrus

large group of edible fruit bearing plants of the genus citrus; including grapefruits, lemons, limes, oranges and tangerines, widely cultivated for their juicy edible fruits that have a leathery aromatic rind

3.2 tangerines/mandarins

all varieties and hybrids of mandarin group (*Citrus reticulata*) and all varieties of tangerines/mandarins

3.3 grapefruit

fruit harvested from a *Citrus paradisi*

3.4 lemon

pale yellow or green oval citrus fruit with thick skin and fragrant acidic juice. Example is rough lemon.

3.5 lime

citrus fruit which is typically round, green or yellow in colour which contains acidic juice vesicles

3.6 orange

fruit of various citrus species with yellow or pale and mostly follow in the citrus genus members

4 Requirements

4.1 General requirements

In all classes, subject to the special precisions for each class and the tolerances allowed, the citrus fruit shall be:

- a) Intact (not damaged)
- b) Free from bruises and/or extensive healed over cuts
- c) Clean, practically free from any visible foreign matter
- d) Practically free from pests and/or damage caused by pests
- e) Free from signs of internal shriveling
- f) Free from excess external moisture
- g) Free from any foreign odour and/or taste
- h) Practically free from malformation
- i) Mature, as defined by parameters specified for each fruit crop provided in Table 1.

Table 1 — Maturity requirements

S/N	Characteristic	Fruit crop					Test methods
		Oranges	Lemons	Lime*	Grape fruits	Mandarins/Tangerines	
i)	Total soluble solids (TSS)%, m/m	8.0 – 13.5	5.5 – 5.6	-	10.4 – 11.4	8.0 – 18.8	TZS 1496
ii)	Acid in juice %	0.6 – 0.7	2.1 – 2.4	-	1.4 – 1.5	0.7 – 1.2	TZS 1488
iii)	TSS: Acid ratio	13.6 – 20.2	2.1 – 3.1	-	7.7 – 7.8	11.4 – 18.1	

*NOTE — Data on maturity requirement for lime was not available.

4.2 Specific requirements

The following specific requirements shall apply to the individual species mentioned:

	Minimum juice content (% m/m)	Colour
Oranges	30	The fruits shall display the colour typical of the variety having regard to harvesting stage and the area in which they are grown.
Mandarins/tangerines	35	The fruits shall display their typical colour. The colour shall cover at least two thirds of their surface.
Grape fruits	35	The fruits shall display the colour typical of the variety, having regard to the time of picking and the area in which they are grown.
Lemons	25	The fruits shall display the colour typical of the variety, having regard to the time of picking and the area in which they are grown. Such typical colour shall cover at least four fifths of the surface.
Limes (a) Green when mature	10 - 25	The fruits shall display the colour typical of the variety having regard to the time of picking and the area in which they are grown.
(b) Yellow when mature	35	

4.3 Classification

Citrus fruits are classified in three classes; Extra class, Class I and Class II

4.3.1 Extra class

Fruits in this class meet the following minimum requirements:

- a) Fruits shall be intact and sound (subject to the special provisions for each class), and in particular free from damage or deterioration caused by insect, diseases or physiological disorder;
- b) They shall retain their calyces except in damp regions where fruits are liable to stem-end rot;
- c) They shall be free from signs of shriveling, bruising, and extrusive healed over cuts;
- d) They shall be clean (free from visible traces of chemicals);
- e) They shall be free from foreign taste or odour;
- f) They shall be free from external moisture;
- g) Colour and flavour shall be acceptable to market requirements; and
- h) The fruits shall present the characteristics typical of the variety.

- i) Fruits meeting the above requirements may be degreened. Degreening and/or preservation by the use of artificial means shall be carried out with chemicals permitted as per TZS 115 (see clause 2). This treatment shall be permitted only if the natural organoleptic characteristics of the product are not modified. Degreened fruits shall display their typical colouring over their entire surface, except in the case of lemons, which shall have yellow colouring over at least four-fifths of their surface.

4.3.2 Class I

The class consists of fruits which do not qualify for extra class. Some of the fruits in the lot may have the following:

- a)
 - i) One or more slightly healed over cuts, the length of which shall not cover more than 20 % of the total diameter of the fruits, and shall not cover more than 2 % of the total surface;
 - ii) slight malformation, having regard to variety;
 - iii) Rough skin, thick skin, and greenish patches;
 - iv) superficial injuries due to hail;
 - v) traces of dirt; and
 - vi) skin blemishes caused by disease or pests.
- (b)
 - (i) skin perceptibly or imperceptibly puffed up;
 - ii) soft withered fruits; and
 - iii) deep injuries due to hail.

4.3.3 Class II

The class consists of marketable quality, but not fit for inclusion in the above classes. They shall include fruits with:

One or more slightly healed over cuts, the length of which shall not cover more than 20 % of the diameter of the fruits, and shall not cover more than 5 % of the total surface;

Malformation, having regard to variety for example Washington navel;

- i) very rough skin and very thick skin;
- ii) slight traces of dirt;
- iii) green or greenish patches;
- iv) skin blemishes caused by disease or pests;
- v) deep healed over cuts;
- vi) soft withered fruits,
- vii) one or more deep injuries due to hail;
- viii) one or more deep imperceptibly puffed up; and
- ix) slight unhealed skin cut.

4.4 Sizing

The fruits shall be sized according to the maximum diameter of their 'equatorial' section.

4.4.1 Fruits of less than the following minimum dimensions of diameter shall be excluded:

Oranges	-	53 mm
Mandarins/tangerines	-	45 mm
Grapefruits	-	70 mm
Lemons	-	45 mm
Limes	-	30 mm

4.4.2 The scales of sizes are shown in Table 2

Size	Scale of diameter in millimeter (mm)				
	Oranges	Mandarins /tangerines	Grapefruits	Lemons	Lime
1	93 – 98	> 70	> 113	> 74	55 – 65 (Large)
2	88 – 92	66 – 70	105 – 113	70 – 74	40 – 55 (Medium)
3	83 – 87	61 – 65	98 – 104	65 – 69	30 – 40 (Small)
4	78 – 82	57 – 60	92 – 97	60 – 64	NA
5	73 – 77	53 – 56	88 – 91	55 – 59	NA
6	68 – 72	49 – 52	85 – 87	50 – 54	NA
7	63 – 67	45 – 48	81 – 84	45 – 49	NA
8	58 – 62	NA	75 – 80	NA	NA
9	53 – 57	NA	70 – 74	NA	NA
NA= Not applicable					

4.5 Tolerance

Tolerance in respect of quality and size shall be allowed as indicated below:

4.5.1 Quality tolerances

4.5.1.1 Extra class

Five per cent (by number) of the fruits provided that have only the following:

- a) Up to five percent or more slightly healed over cuts, the length of which shall not exceed ten percent of the diameter indicated in the scales of size.
- b) Up to two per cent each:
 - i) Malformation, having regard to variety
 - ii) Very rough skin
 - iii) Very thick skin
 - iv) One or more deep over cuts, not extensive
 - v) One or more superficial injuries due to hail
 - vi) Skin blemishes caused by disease or pests
 - vii) Slight traces of dirt

In no case shall tolerances in clause 4.5.1 .1 (a) and (b) taken together exceed five per cent.

Apart from the above-mentioned tolerances, up to five percent of the fruits may have lost their calyces before dispatch provided that they have no other defects.

4.5.1.2 Class I

Up to five percent of the fruits may have defects listed in clause 4.3.2 (a); and up to two percent of the fruits may have defects in clause 4.3.2 (b).

In no case shall total tolerances exceed seven per cent. In addition to the above mentioned tolerance, up to twenty five percent of the fruits may have lost their calyces provided that they have no other defects.

However, where this applies to ten percent or more of the fruits, the exporter shall obtain the consent of the importer.

4.5.1.3 Class II

Up to 10 % of the fruits may have defects listed in clause 4.3.3.

In no case shall total tolerances taken together exceed twelve percent.

In addition to the above mentioned, up to twenty five percent of the fruits may have lost their calyces, provide that they have no other defects.

However, where this applies to not less than ten percent of the fruits, the exporter/seller shall obtain the consent of the importer/buyer concerned.

4.5.2 Size tolerance

Five per cent (by number) of the fruits per package conforming to the size immediately above or below that stated on the package.

4.6 Uniformity

Each package shall contain fruits of the same variety, quality and size.

5 Contaminants

5.1 Pesticide residues

Citrus fruits shall conform to the pesticide residue limits prescribed in the CODEX Pesticides Residues in Food Online Database.

5.2 Heavy Metal

Citrus shall comply with those maximum levels for heavy metals established by the CODEX Stan 193.

6 Hygiene

It is recommended that the produce covered by the provisions of this Tanzania Standard shall be prepared and handled in accordance with the TZS 109 (see clause 2)

Citrus fruits shall be free from parasites, microorganisms or substances originating from them in amounts which may present a hazard to human health.

7 Sampling and tests

Representative samples of the citrus shall be drawn as prescribed in TZS 1002 (see clause 2) and be tested in accordance to the methods described in this Tanzania Standard.

8 Packing, marking and labelling

8.1 Packing

8.1.1 The citrus fruits shall be packed in such a way as to protect the produce properly. The cushioning materials used inside the package, shall be new, clean and of quality such as to avoid causing any external or internal damage to produce.

8.1.2 The use of any substance tending to modify the natural characteristic of citrus fruits, especially their taste or smell, shall be prohibited.

8.1.3 The cushioning materials used inside the package shall be new and harmless to human health.

8.1.4 Citrus for air and sea transport shall be packed in suitable containers according to market requirements.

8.1.5 Packages shall be made of recyclable materials.

8.1.6 In addition to the provisions covered by this Tanzania Standard, citrus fruits shall also be packed in according with TZS 1003 and TZS 538 (see clause 2).

8.2 Marking and labelling

Each package shall bear the following particulars legibly and indelibly marked on the label:

- a) name of the produce – common name and variety;
- b) name and address of the packer, exporter and/or dispatcher;
- c) name of the producing country, region and district;
- d) commercial identifications – class and size (reference number and number of fruits);
- e) storage conditions;
- f) net weight in kg; and
- g) identification batch number (in code or in clear);
- h) Date of harvest and packing.

8.3 Standards Mark of Quality

Each package may also be marked with TBS Standards Mark of Quality.

NOTE — The use of the TBS Standards Mark of Quality is governed by the provisions of the standards Act, 2009. Details of conditions under which a license for the use of TBS certification mark may be granted to manufacturers may be obtained from TBS.

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