

Pickled fruits and vegetables - Specification

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Pickled fruits and Vegetables- Specification

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This Kenya Standard was developed by the Technical Committee on Processed Fruits and Vegetables under the guidance of the Standards Projects Committee, and it is in accordance with the procedures of the Kenya Bureau of Standards.

The standard stipulates the essential compositional, quality, microbiological, contaminants and labelling requirements for canned vegetables as defined in this standard. These vegetables include canned asparagus, carrots, green peas, green beans and wax beans, mature processed peas, palmito, canned sweet corn

In the preparation of this standard useful information was derived from members of the technical committee, Codex standard for pickled fruits and vegetables (CODEX STAN 297-2009) and local manufacturers

This Kenya standard replaces the following standards:

Canned asparagus (KS CODEX STAN 56-1981);
Canned carrots (KS CODEX STAN 116-1981);
Canned green peas (KS CODEX STAN 58-1981);
Canned green beans and wax beans (KS CODEX STAN 16-1981);
Canned mature processed peas (KS CODEX STAN 81-1981);
Canned palmito (KS CODEX STAN 144-1985), and
Canned sweet corn (KS CODEX STAN 18-1981)

Pickled fruits and Vegetables

1. SCOPE

This Kenya Standard specifies requirements and methods of test and sampling for pickled fruits and vegetables, as defined in Section 3 below, offered for direct consumption, including for catering purposes or for repacking if required.

The products covered by this Standard include, but are not limited to onions, garlic, mango, radish, ginger, beetroot, royal plum, peppers, hearts of palm, cabbage, lettuce, lemons, baby corn (young corn), and green mustard (*Brassica juncea* ssp). It does not apply to the product when indicated as being intended for further processing. This Standard does not cover pickled cucumbers, kimchi, table olives, sauerkraut, chutneys and relishes.

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.

AOAC 968.30

AOAC 971.33

KS EAS 38, labeling of prepackaged foods

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

KS EAS 12, Drinking (Potable) water- Specification

KS EAS 803; Nutrition labeling – Requirements

KS EAS 804:2013 Claims on foods – Requirements

KS EAS 805; Use of Nutrition and health claims

Codex Stan 195, General Standard for Food Additives

Codex Stan 193, General Standard for contaminants

KS 38, Plantation (mill) white sugar — Specification

KS 344; Honey- Specification

KS EAS 5, Refined white sugar — Specification

KS ISO 4833-1; Microbiology of the food chain -- Horizontal method for the enumeration of microorganisms -- Part 1: Colony count at 30 degrees C by the pour plate technique

KS ISO 6888-1; Microbiology of food and animal feeding stuffs -- Horizontal method for the enumeration of coagulase-p-staphylococci (*Staphylococcus aureus* and other species) -- Part 1: Technique using Baird-Parker agar medium

KS ISO 16649-1; Microbiology of food and animal feeding stuffs -- Horizontal method for the enumeration of beta-glucuronidase-positive *Escherichia coli* -- Part 1: Colony-count technique at 44 degrees C using membranes and 5-bromo-4-chloro-3-indolyl beta-D-glucuronide

KS ISO 762; Fruit and vegetable products -- Determination of mineral impurities content
KS ISO 7251, Microbiology of food and animal feeding stuffs - Horizontal method for the detection and enumeration of presumptive *Escherichia coli* - Most probable number technique

KS ISO 763, Fruits and vegetable products - Determination of ash insoluble in hydrochloric acid

KS ISO 2448, Fruit and vegetable products - Determination of ethanol content

KS ISO 2172, Fruit juice - Determination of soluble solids content - Pycnometric method

KS ISO 2173, Fruit and vegetable products - Determination of soluble solids - Refractometric method

KS ISO 5522, Fruits, vegetables and derived products - Determination of total *sulphur dioxide content*

3 DESCRIPTION**3.1 Product definition**

3.2. Pickled fruits and vegetables is the product:

- (a) Prepared from sound, clean and edible fruits and/or vegetables, with or without seeds, spices, aromatic herbs and/or condiments;
- (b) Processed or treated to produce an acid or acidified product preserved through natural fermentation or acidulants. Depending on the type, appropriate ingredients are added in order to ensure preservation and quality of the product;
- (c) processed in an appropriate manner, before or after being hermetically sealed in a container, so as to ensure the quality and safety as well as to prevent spoilage; and/or
- (d) Packed with or without a suitable liquid packing medium (e.g., oil, brine or acidic media such as vinegar) as specified in Section 5.1.2, with ingredients appropriate to the type and variety of pickled product, to ensure an equilibrium pH of less than 4.6.

3.2.9. Mixed Vegetables

A product prepared from a mixture of three or more types of fresh or frozen or dry washed clean and sound vegetables

3.3 Styles

- (a) Any presentation of the product should be permitted provided that the product meets all requirements of the Standard;
- (b) Style presentations could include for example, whole, pieces, halves, quarters, cubes, shredded or chopped.

3.3.1 Types of Pack

3.3.1.1 Solid *Pack* – without any added packing medium.

3.3.2.1 Regular *Pack* – with a packing medium added, as specified in Section 3.1.2.

5. Essential composition and quality factors

5.1. Composition

5.1.1. Basic Ingredients

Fruits and vegetables and liquid packing medium when appropriate, as defined in Sections 3.1(a), 3.1(d) and 5.1.2.1, in combination with one or more of the other permitted ingredients listed in Section 5.2.2.

5.1.2.1 Packing Media

5.1.2.1.1 for pickled fruits, in accordance with the *Guidelines on Packing Media for Canned Fruits* (CAC/GL 51-2003).

5.1.2.2 for pickled vegetables, in accordance with the following provisions:

(a) Basic Ingredients

Water, and if necessary salt or oil or acidic media such as vinegar

(b) Optional Ingredients

Packing media for pickled vegetables may contain ingredients subject to labelling requirements of Section 8 and may include, but is not limited to.

- (1) foodstuff with sweetening properties such as sugars (including syrups) as defined in the *Standard for Sugars* (CODEX STAN 212-1999), honey as defined in the *Standard for Honey* (KS 344) or juices and/or nectars as defined in the *Fruit Juices and Nectars Specification* (KS 2640) and;
- (2) aromatics plants, spices or extracts thereof, seasoning (in accordance with the relevant Codex standards for spices or culinary herbs);
- (3) vinegar;
- (4) oil (in accordance with the relevant Codex standards for vegetable oils);
- (5) tomato puree (in accordance with the *Standard for Processed Tomato Concentrates* (CODEX STAN 57-1981));

- (6) malt extract;
- (7) sauce (e.g., fish sauce);
- (8) soy sauce;
- (9) other ingredients as appropriate.

5.1.2.2 Other Permitted Ingredients

- a) cereal grains;
- (b) dried fruits;
- (c) malt extract;
- (d) nuts;
- (e) pulses;
- (f) sauce (e.g., fish sauce);
- (g) soy sauce;
- (h) foodstuff with sweetening properties such as sugars (including syrups) and honey as defined in the *Standards for Sugars* (CODEX STAN 212-1999) and *Honey* (CODEX STAN 12-1981) respectively; and
- (i) Nutrients For the purpose of product fortification, essential nutrients such as vitamins and minerals may be added to products. Such additions shall comply with national legislation established for this purpose.

NOTE: any optional ingredients added are subject to ingredient labelling requirements (see Clause 10)

- j) Other ingredients as appropriate.

5.2 Quality Criteria

5.2.1 Colour, Flavour and Texture

The product shall have normal colour, flavour odour and texture characteristics of the product

5.2.2 Other Quality Criteria

5.2.2.1 Pickled fruits and/or vegetables in edible oil

The percentage of oil in the product shall not be less than 10% by weight.

5.2.2.2 Pickled fruits and/or vegetables in brine or an acidic medium

The percentage of salt in the covering liquid or the acidity of the media shall be sufficient to ensure the keeping quality and proper preservation of the product.

5.2.2.3 Definition of Defects

- (a) Blemishes - means any characteristic including, but not limited to, bruises, scab, and dark discolouration, which adversely affects the overall appearance of the product.
- (b) Harmless extraneous material - means any vegetable part (such as, but not limited to, a leaf or portion thereof, or a stem) that does not pose any hazard to human health but affects the overall appearance of the final product.

5.2.3 Defects and Allowances

The product should be practically free from defects as defined in Section 5.2.2

5.2.3.1 Classification of “Defectives”

A container that fails to meet one or more of the applicable quality requirements, as set out in Section

5.2 (except those based on sample averages), should be considered as a “defective”.

5.2.3.2 Lot Acceptance

A lot should be considered as meeting the applicable quality requirements referred to in Section 3.2 when:

- (1) for those requirements which are not based on averages, the number of “defectives”, as defined in Section 3.3, does not exceed the acceptance number (c) of the appropriate sampling plan with an AQL of 6.5; and

(2) The requirements of Section 3.2, which are based on sample averages, are complied with.

6. FOOD ADDITIVES

Acidity regulators, antifoaming agents, antioxidants, colours, firming agents, flavour enhancers, preservatives, sequestrants, and sweeteners used in accordance with Tables 1 and 2 of the *General Standard of Food Additives* in the food category in which the individual pickled fruit or vegetable fall into (i.e., one of the following categories: 04.1.2.3, 04.1.2.10, 04.2.2.3, and 04.2.2.7) or listed in Table 3 of the General Standard are acceptable for use in foods conforming to this Standard.

7. Contaminants

The products covered by this Standard shall comply with the maximum levels of the General Standard for Contaminants and Toxins in Food and Feed (CODEX STAN 193-1995).

7.1 Pesticide residues

The products covered by this Standard shall comply with the maximum residue limits for pesticides established by the Codex Alimentarius Commission.

7.2 Heavy Metal Contaminants

The products covered by the provisions of this standard shall conform to those maximum limits for Heavy metals contaminants established by the Codex Alimentarius Commission for these products in table 5 below

TABLE 5- Contaminants

CONTAMINANTS		MAXIMUM LEVEL	Method of Test
Arsenic	(As)	0.2 mg/kg	AOAC 942.17 AOAC 952.13 or KS ISO 6634:1982
Lead	(Pb)	0.3 mg/kg	AOAC 972.25 / KS ISO 6733
Copper	(Cu)	5.0 mg/kg	AOAC 999.10
Zinc	(Zn)	5.0 mg/kg	AOAC972.25 / KS ISO 5738
Iron	(Fe)	15 mg/kg	AOAC 999.10
Tin	(Sn)	250 mg/kg	AOAC 980.19
Mercury	(Hg)	0.01	AOAC 999.10
Cadmium	(cd)	0.05 mg/kg	AOAC 999.11/ KS ISO 6732

7.3 Other contaminants

The products covered by the provisions of this standard shall conform to those maximum levels for contaminants established by the Codex Alimentarius Commission for these products

8. Hygiene

8.1

It is recommended that the products covered by the provisions of this Standard be prepared and handled in accordance with the appropriate sections of the *General Principles of Food Hygiene* (CAC/RCP 1-1969), Code

of *Hygienic Practice for Low and Acidified Low-Acid Canned Foods (CAC/RCP 23-1979)* and other relevant Codex texts such as codes of hygienic practice and codes of practice.

8.2 The products shall conform to microbiological criteria in Table 6 and those provided in KS 2455; Food Safety -general standard

Table 6 - Microbiological limits for pickled fruits and vegetables

SL No.	Microorganism	Limit	Method of Test
i.	<u>Escherichia coli, (cfu/g), max</u>	<u>Absent</u>	<u>KS ISO 7251</u>
ii.	<u>Staphylococcus aureas, (cfu/25g)</u>	<u>Absent</u>	<u>KS ISO 6888-1</u>
iii.	<u>Shigella, cfu/25g</u>	<u>Absent</u>	<u>KS ISO4833</u>
iv.	<u>Salmonella. Cfu/25g</u>	<u>Absent</u>	<u>KS ISO 6579</u>
v.	<u>Colostridium botulinum, cfu/25g</u>	<u>Absent</u>	<u>KS ISO 4833</u>
vi.	<u>Vibrio cholera, cfu/25g</u>	<u>Absent</u>	<u>KS ISO 4833</u>
vii.	<u>Moulds (cfu/25g), max</u>	<u>Absent</u>	<u>KS ISO 7954</u>

9.3 WEIGHTS AND MEASURES

9.1 Fill of Container

9.1.1 Minimum Fill

The container should be well filled with the product (including packing medium) which should occupy not less than 90% (minus any necessary head space according to good manufacturing practices) of the water capacity of the container. The water capacity of the container is the volume of distilled water at 20oC which the sealed container will hold when completely filled. This provision does not apply to vacuum packaged vegetables. This shall be carried out in accordance to CAC/RM 46-1972 (Codex General Method for processed fruits and vegetables) and ISO 90.1:1999

9.1.2 Classification of “Defectives”

A container that fails to meet the requirement for minimum fill of Section 7.1.1 should be considered as a “defective”.

9.1.3 Lot Acceptance

A lot should be considered as meeting the requirement of Section 7.1.1 when the number of “defectives”, as defined in Section 7.1.2, does not exceed the acceptance number (c) of the appropriate sampling plan with an AQL of 6.5.

9.1.4 Minimum Net and Drained Weight

- 7.9.1.4.1** The drained weight of the product should be not less than the following percentages, calculated on the basis of the weight of distilled water at 20^oC which the sealed container will hold when completely filled.
- (a) Whole and Halves Style should not be less than 40% of the net weight;
 - (b) Pieces Style and Other Styles should not be less than 50% of the net weight (except for pickled red cabbage should not be less than 45% of the net weight).

Table 7 – Drained weight requirements for Pickles

(i) Pickles in Citrus juice or Brine conforming to the following requirements:—

Drained Weight	Not less than 60.0 percent	AOAC 968.30
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Sodium Chloride content when packed in Brine	Not less than 12.0 percent	
Acidity as Citric Acid when packed In Citrus Juice	Not less than 1.2 percent	

(ii) Pickles in Oil

Drained Weight	Not less than 60.0 percent	AOAC 968.30
Fruit and Vegetable pieces shall be practically remaining submerged in oil		

(iii) Pickles in Vinegar

Drained Weight	Not less than 60.0 percent	AOAC 968.30
Acidity of vinegar as acetic acid	Not less than 2.0 percent	

Note: Pickle without medium means the pickles other than enumerated above. This may contain ingredients given in Para 1 of this specification. Such pickles shall be labelled as "(give name of vegetable or fruits) Pickle".

9.1.5 Packaging

The products covered by the provisions of this standard shall be packaged in clean food grade packaging material to protect the product from contamination. The packaging materials and process shall not contaminate the product or otherwise affect its technological, nutritional or sensory quality.

10. Labelling

In addition to the Standard for the Labelling of Pre-packaged Foods (KS EAS 38), the following specific provisions apply:

10.1 Name of the product

10.1.1 Pickled fruits and/or vegetables shall be labelled according to the type and in combination with the name of major ingredient. Example - a pickle made from ginger shall be labelled "Pickled Ginger in Brine".

10.1.2 The presentation style should be declared on the label of the food.

10.1.3 The name of the product shall include the indication of the packing medium as set out in Section 3.1(d).

10.1.4 In the case of mixed vegetables; List of the names of the various vegetables species used in the mix shall be listed in descending order of the proportions

10.2 Additional Requirements

10.2.1 Drain weight declaration content; pickled fruits and vegetables must be labelled with a declaration of "Drained weight content ___%".
10.2.6 Ingredient declaration

10.2.2 Nutrition declaration - Any added essential nutrients declaration should be labelled in accordance with the Guidelines on Nutrition Labelling (CAC/GL 2-1985), General Guidelines on Claims (CAC/GL 1-1979) and the CAC/GL 23-1997; Guidelines for Use of Nutrition and Health Claims

10.2.3 Pickled fruits and vegetables containing spices and/or aromatic herbs

Where tomato juice contains spices and/or aromatic herbs in accordance with Section 3.1.2(f), the term “spiced” and/or the common name of the aromatic herb shall appear on the label near the name of the juice.

10.2 Non-retail containers

Information for non-retail containers not destined to final consumers shall be given either on the container or in accompanying documents, except that the name of the product, lot identification, net contents and the name and address of the manufacturer, packer, distributor or importer, as well as storage instructions, shall appear on the container, except that for tankers the information may appear exclusively in the accompanying documents.

However, lot identification, and the name and address of the manufacturer, packer, distributor or importer may be replaced by an identification mark, provided that such a mark is clearly identifiable with the accompanying documents.

10.3 List of Ingredients — a complete list of ingredients including added syrup shall be declared on the label in descending order of proportion.

10.4 Net Contents — the net contents shall be declared by volume in metric units (*Système Internationale*).

10.5 Name or business name and Address of the manufacturer, packager, distributor, importer, exporter or vendor of the product, whichever may apply, shall be declared.

10.6 Instructions for use shall be declared

10.7 Storage conditions or conditions for use

10.8 Lot Identification — each container shall be embossed or otherwise permanently marked in code or in clear identity the producing factory and the lot.

10.9 Place/country of origin

10.8 Date of expiry

10.9 irradiation status, where applicable

11. Methods of sampling and test

The products covered by the provisions of this standard shall be tested using appropriate standard methods declared in this standard. Other test may be performed as per the methods given in the latest AOAC/ Codex/ ISO and other internationally recognized methods. Sampling shall be as described in the Standard.

**DETERMINATION OF WATER CAPACITY OF
CONTAINERS (CAC/RM 46-1972)**

1. SCOPE

This method applies to glass containers.

2. DEFINITION

The water capacity of a container is the volume of distilled water at 20°C which the sealed container will hold when completely filled.

3. PROCEDURE

3.1 Select a container which is undamaged in all respects.

3.2 Wash, dry and weigh the empty container.

3.3 Fill the container with distilled water at 20°C to the level of the top thereof, and weigh the container thus filled.

4. CALCULATION AND EXPRESSION OF RESULTS

Subtract the weight found in 3.2 from the weight found in 3.3. The difference shall be considered to be the weight of water required to fill the container. Results are expressed as ml of water.

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