CODEX ALIMENTARIUS
INTERNATIONAL FOOD STANDARDS

Food and Agriculture Organization of the United Nations
World Health Organization

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STANDARD FOR PICKLED FRUITS AND VEGETABLES

CXS 260-2007

Adopted in 2007. Amended in 2015, 2017, 2022, 2023.

2022 Amendments

Following decisions taken at the Forty-fifth Session of the Codex Alimentarius Commission in December 2022, amendments were made in Section 8.3 Labelling of non-retail containers

2023 Amendments

Following decisions taken at the Forty-sixth Session of the Codex Alimentarius Commission in December 2023, the wording in Section 9. Methods of analysis and sampling was amended.

1. SCOPE

This standard applies to products, as defined in Section 2 below, and 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. DESCRIPTION

2.1 Product definition

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 3.1.2, with ingredients appropriate to the type and variety of pickled product, to ensure an equilibrium pH of less than 4.6.

2.2 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.

2.3 Types of pack

2.3.1 ***Solid pack*** – without any added packing medium.

2.3.2 ***Regular pack*** – with a packing medium added, as specified in Section 3.1.2.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1. Composition

3.1.1 *Basic ingredients*

Fruits and vegetables and liquid packing medium when appropriate, as defined in Sections 2.1(a), 2.1(d) and 3.1.2, in combination with one or more of the other permitted ingredients listed in Section 3.1.3.

3.1.2 *Packing media*

3.1.2.1 For pickled fruits, in accordance with the *Guidelines for Packing Media for Canned Fruits* (CXG 51-2003).[1]

3.1.2.2 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* (CXS 212-1999),[2] honey as defined in the *Standard for Honey* (CXS 12-1981)[3] or juices and/or nectars as defined in the *General Standard for Fruit Juices and Nectars* (CXS 247-2005)[4] 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* [CXS 57-1981]);[5]

(6) malt extract;

(7) sauce (e.g., fish sauce);

(8) soy sauce; and

(9) other ingredients as appropriate.

3.1.3 ***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* (CXS 212-1999)[2] and *Honey* (CXS 12-1981)[3] respectively; and

(i) other ingredients as appropriate.

3.2 Quality criteria

The product shall have colour, flavour, odour and texture characteristic of the product.

3.2.1 ***Other quality criteria***

3.2.1.1 *Pickled fruits and/or vegetables in edible oil*

The percentage of oil in the product shall not be less than ten percent by weight.

3.2.1.2 *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.

3.2.1.3 *Definition of defects*

(a) Blemishes – means any characteristic including, but not limited to, bruises, scabs, 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.

3.2.1.4 *Defects and allowances*

The product should be practically free from defects as defined in Section 3.2.

3.3 Classification of "defectives"

A container that fails to meet one or more of the applicable quality requirements, as set out in Section 3.2 (except those based on sample averages), should be considered as a "defective".

3.4 Lot acceptance

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

(a) 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 a acceptable quality limit (AQL) of 6.5; and

(b) the requirements, which are based on sample averages, are complied with.

4. FOOD ADDITIVES

Acidity regulators, antifoaming agents, antioxidants, colours, colour retention agents, firming agents, flavour enhancers, preservatives, sequestrants, stabilizers and sweeteners used in accordance with Tables 1 and 2 of the *General Standard of Food Additives* (CXS 192-1995)[6] 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.

5. CONTAMINANTS

5.1 The products covered by this standard shall comply with the maximum levels of the *General Standard for Contaminants and Toxins in Food and Feed* (CXS 193-1995).[7]

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

6. HYGIENE

6.1 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* (CXC 1-1969),[8] *Code of Hygienic Practice for Low and Acidified Low-Acid Canned Foods* (CXC 23-1979)[9] and other relevant Codex texts such as codes of hygienic practice and codes of practice.

6.2 The products should comply with any microbiological criteria established in accordance with the *Principles and Guidelines for the Establishment and Application of Microbiological Criteria related to Foods* (CXG 21-1997).[i,10]

7. WEIGHTS AND MEASURES

7.1 Fill of container

7.1.1 *Minimum fill*

The container should be well filled with the product (including packing medium when appropriate) which should occupy not less than 90 percent (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 20 °C which the sealed container will hold when completely filled.

7.1.2 *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".

7.1.3 *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.

7.1.4 *Minimum drained weight*

7.1.4.1 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 °C which the sealed container will hold when completely filled.[ii]

(a) Whole and halves style should not be less than 40 percent of the net weight;

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[i] For products that are rendered commercially sterile in accordance with the *Code of Hygienic Practice for Low and Acidified Low-Acid Canned Foods* (CXC 23-1979), microbiological criteria are not recommended as they do not offer benefit in providing the consumer with a food that is safe and suitable for consumption.

[ii] For non-metallic rigid containers such as glass jars, the basis for the determination should be calculated on the weight of distilled water at 20 °C which the sealed container will hold when completely filled less 20 ml.

(b) Pieces style and other styles should not be less than 50 percent of the net weight (except for pickled red cabbage should not be less than 45 percent of the net weight).

7.1.4.2 *Lot acceptance*

The requirements for minimum drained weight should be deemed to be complied with when the average drained weight of all containers examined is not less than the minimum required, provided that there is no unreasonable shortage in individual containers.

8. LABELLING

8.1 The products covered by the provisions of this standard shall be labelled in accordance with the *General Standard for the Labelling of Pre-packaged Foods* (CXS 1-1985).[11] In addition, the following specific provisions apply:

8.2 Name of the product

8.2.1 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”.

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

8.2.3 The name of the product shall include the indication of the packing medium as set out in Section 2.1(d).

8.3 Labelling of non-retail containers

The labelling of non-retail containers should be in accordance with the *General Standard for the Labelling of Non-Retail Containers of Foods* (CXS 346-2021).**Error! Bookmark not defined.**

9. METHODS OF ANALYSIS AND SAMPLING

For checking compliance with this Standard, the methods of analysis and sampling contained in the *Recommended Methods of Analysis and Sampling* (CXS 234-1999)[12] relevant to the provisions in this standard shall be used.

NOTES

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[1] FAO and WHO. 2003. *Guidelines for Packing Media for Canned Fruits.* Codex Alimentarius Guideline, No. CXG 51-2003. Codex Alimentarius Commission. Rome.
[2] FAO and WHO. 1999. *Standard for Sugars*. Codex Alimentarius Standard, No. CXS 212-1999. Codex Alimentarius Commission. Rome.
[3] FAO and WHO. 1981. *Standard for Honey.* Codex Alimentarius Standard, No. CXS 12-1981. Codex Alimentarius Commission. Rome.
[4] FAO and WHO. 2005. *General Standard for Fruit Juices and Nectars*. Codex Alimentarius Standard, No. CXS 247-2005. Codex Alimentarius Commission. Rome.
[5] FAO and WHO. 1981. *Standard for Processed Tomato Concentrates*. Codex Alimentarius Standard, No. CXS 57-1981. Codex Alimentarius Commission. Rome.
[6] FAO and WHO. 1995. *General Standard of Food Additives*. Codex Alimentarius Standard, No. CXS 192-1995. Codex Alimentarius Commission. Rome.
[7] FAO and WHO. 1995. *General Standard for Contaminants and Toxins in Food and Feed*. Codex Alimentarius Standard, No. CXS 193-1995. Codex Alimentarius Commission. Rome.
[8] FAO and WHO. 1969. *General Principles of Food Hygiene*. Codex Alimentarius Code of Practice, No. CXC 1-1969. Codex Alimentarius Commission. Rome.
[9] FAO and WHO. 1979. *Code of Hygienic Practice for Low and Acidified Low-Acid Canned Foods*. Codex Alimentarius Code of Practice, No. CXC 23-1979. Codex Alimentarius Commission. Rome.
[10] FAO and WHO. 1997. *Principles and Guidelines for the Establishment and Application of Microbiological Criteria related to Foods*. Codex Alimentarius Guideline, No. CXG 21-1997. Codex Alimentarius Commission. Rome.
[11] FAO and WHO. 1985. *General Standard for the Labelling of Pre-packaged Foods*. CXS 1-1985. Codex Alimentarius Commission. Rome.
[12] FAO and WHO. 1999. *Recommended Methods of Analysis and Sampling*. Codex Alimentarius Standard, No. CXS 234-1999. Codex Alimentarius Commission. Rome.