

CODEX ALIMENTARIUS

INTERNATIONAL FOOD STANDARDS



Food and Agriculture
Organization of
the United Nations



World Health
Organization

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STANDARD FOR PICKLED CUCUMBERS (CUCUMBER PICKLES)

CXS 115-1981

Adopted in 1981. Amended in 2017, 2020, 2022, 2024.

2024 Amendments

Following decisions taken at the Forty-seventh Session of the Codex Alimentarius Commission in December 2024, amendments were made in Section 4. Food additives.

2022 Amendments

Following decisions taken at the Forty-fifth Session of the Codex Alimentarius Commission in December 2022, amendments were made in Section 8.2 Labelling of non-retail containers.

1. SCOPE

This standard applies to pickled cucumbers (in some countries cucumber pickles) intended for direct consumption which are:

- (a) prepared with cucumbers as the predominant ingredient;
- (b) prepared from desalted cured cucumbers, fermented naturally or by controlled fermentation, or from fresh cucumbers which are acidulated; or
- (c) preserved through natural or control fermentation or added acidulants and may be further preserved by pasteurization with heat, by other physical means or by chemical preservatives.

In some countries, the word “cucumbers” is associated with large size fruit, whereas the word “gherkin” (in French “cornichons”) refers to small fruit. Irrespective of customary national trade practice, these products are included in this standard.

This standard does not cover finely chopped products called relish.

2. DESCRIPTION

2.1 Product definition

Picked cucumbers is the product:

- (a) prepared from clean, sound cucumbers of cultivars conforming to the characteristics of *Cucumis sativus* L.;
- (b) that may or may not be peeled and may or may not have seeds removed;
- (c) packed with or without a suitable liquid packing medium and seasoning ingredients appropriate to the product; and
- (d) is preserved in an appropriate manner before or after the container is closed – such preservation to include acidulation to a pH of 4.6 or less either by natural or controlled fermentation or addition of a vinegar or an edible acid, and may also include heat pasteurization, refrigeration or a chemical preservative.

2.2 Types and kinds of pack

2.2.1 Fresh pack type

Prepared from fresh, uncured and unfermented cucumbers.

2.2.2 Cured type

Prepared from cucumbers which have been cured in salt brine or in other suitable curing solution with or without natural or controlled fermentation. Such salt stock may be sufficiently desalted, if necessary, during preparation for processing.

2.2.3 Subtypes

Analytical characteristics of the subtype are determined on the packing medium after equalization.

Subtype	Characterizing flavour	Prepared from _____ type
(a) Dill	Dill herb and/or oil of dill	Fresh pack or cured types
(b) “_____” (name of herb)	Herb and oils thereof other than dill herb and/or oil of dill	Fresh pack or cured types
(c) Sour	Pronounced sour	Fresh pack or cured types
(d) Sweet-sour	Moderately sweet-sour	Fresh pack or cured types
(e) Sweet	Pronounced sweet	Fresh pack or cured types
(f) Mustard	Mustard sauce, mustard seed and/or oil of mustard	Fresh pack or cured types
(g) Salt sour	Pronounced salty	Fresh pack type
(h) Mild	Neither sweet nor sour	Fresh pack or cured types
(i) Hot	Pronounced pepper	Fresh pack or cured types

Subtype	Total acidity (as acetic acid)	Salt (NaCl)	Salt free soluble solids
(a) Dill	0.4% to 2.0%	1.0% to 4.5%	-
(b) “_____” (name of herb)	0.4% to 2.0%	1.0% to 4.5%	-
(c) Sour	0.7% to 3.5%	1.0% to 5.0%	-
(d) Sweet-sour	0.5% to 2.0%	0.5% to 3.0%	1.5% to less than 14%
(e) Sweet	0.5% to 2.5%	0.5% to 3.0%	14.0% minimum
(f) Mustard	0.5% to 3.0%	1.0% to 3.0%	-
(g) Salt sour	0.5% to 3.5%	5.0% to 10%	-
(h) Mild	0.4% to 0.7%	1.0% to 3.5%	-
(i) Hot	0.5% to 3.0%	1.0% to 3.0%	-

2.3 Styles

The product shall be presented in one of the following styles:

- Whole:** cucumbers with a maximum diameter of 54 mm. In containers larger than 4 litres, the cucumbers may have a maximum diameter of 65 mm. Whole cucumbers of this style may be designated as “gherkin” when they are not larger than 27 mm in diameter.
- Whole curved:** whole cucumbers with a maximum diameter of 54 mm and curved at least 35°.
- Halves:** cucumbers divided lengthwise into halves.
- Finger cut, sliced lengthwise or spears:** cucumbers cut lengthwise into sections of approximately equal size.
- Ring cut or chunks:** cucumbers cut at right angles to the longitudinal axis having a thickness from 10 to 40 mm and a maximum diameter of 54 mm.
- Slices or cross cuts or chips:** cucumbers cut at right angles to the longitudinal axis having a thickness of not more than 10 mm and a maximum diameter of 54 mm.
- Strips “Asier”:** large cucumbers, peeled, divided lengthwise. The prepared halves are cut at right angle to the longitudinal direction into strips of approximately 10 mm width.

2.4 Other styles

Any other presentation of the product shall be permitted provided that the product:

- (a) is sufficiently distinctive from other forms of presentation laid down in this standard;
- (b) meets all relevant requirements of this standard, including requirements relating to limitations on defects, drained weight, and any other requirements in this standard which are applicable to that style in the standard which most closely resembles the style or styles intended to be provided for under this provision; and
- (c) is adequately described on the label to avoid confusing or misleading the consumer.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Permitted ingredients

- cucumbers as specified in Sections 1 and 2
- water
- vinegar
- salt (sodium chloride)
- vegetable oils
- nutritive carbohydrate sweeteners
- paprika
- herbs
- spices
- condiments
- vegetables } shall not exceed 5 percent of the total weight of the product, except for the subtype "mustard", which may contain no more than 30 percent.

3.2 Quality criteria

3.2.1 Colour

The cucumbers shall have normal colour characteristics typical of the variety, type of pack and style.

3.2.2 Texture

The cucumbers shall be reasonably firm, crisp and practically free from shrivelled, soft and flabby units and reasonably free from very large seeds.

3.2.3 Flavour

The cucumbers shall have a good flavour typical of the type of pack and in consideration of any characterizing flavouring or special ingredients used.

3.2.4 Size uniformity

(a) Whole style: spears or sliced lengthwise

80 percent or more, by count, of the cucumbers shall meet the following requirements:

Length: the length of the longest unit shall not exceed that of the shortest unit by more than 50 percent.

Diameter: the diameter of the largest unit shall not exceed that of the smallest unit by more than 50 percent.

These requirements do not apply to cucumbers packed in containers of over 4 litres.

(b) Ring cut; slices; cross cuts

80 percent or more by weight of units having the most uniform size meet the following requirement for individual containers or sample units.

Diameter: the diameter of the largest unit shall not exceed that of the smallest unit by more than 50 percent.

3.2.5 Definition of defects

- (a) **Curved cucumbers:** means whole cucumbers that are curved at an angle of 35° when measured as illustrated in Annex I.
- (b) **Misshaped cucumbers:** means whole cucumbers, nubbins, and other deformed cucumbers as illustrated in Annex I.
- (c) **Blemished:** means affected to a degree that materially detracts from appearance and edibility by discolouration, scars, scratches, skin breaks or other similar imperfections.
- (d) **Mechanical damage:** means crushed or broken units.
- (e) **Stem:** means any stalk longer than 15 mm.
- (f) **Poor texture:** excessively shrivelled, very soft or flabby or units with very large seeds.
- (g) **Off colour:** units that vary markedly from the colour typical of the variety and type of pack.
- (h) **Hollow centres:** whole cucumbers in which the internal cavity is large or ring cuts and slices in which a substantial portion of the centre is missing.
- (i) **Grit, sand or silt:** means any mineral impurities, whether in the liquid packing medium or imbedded in the skin or flesh of the cucumbers that affect the edibility.

3.2.6 Allowances for defects

Whole; whole curved; halves; finger cut or spears

Standard sample unit – 20 whole cucumbers: or 40 halves, finger cut or spears.

Defect	Maximum limit (No. of units)	
	Whole curved; whole	Halves; finger cut or spears
(a) Curved (except curved style)	3	2
(b) Misshapen	2	1
(c) Blemished	3	3
(d) Mechanical damage	2	3
(e) Stem	3	2
(f) Poor texture	1	3
(g) Off colour	1	2
(h) Hollow centre	1	-
Maximum allowable total	—	—
(a) through (h)	7	11

Ring cuts; slices; strips

Standard sample unit – 300 g drained pickles.

Defect	Maximum limit in g
(a) Blemished	15
(b) Mechanical damage	30
(c) Poor texture	10
(d) Off colour	10
(e) Hollow centre	30
(f) Stems	2 each
Maximum allowable total	—
(a) through (e)	75 g

3.2.7 Mineral impurities

All styles and types, except for cucumbers that are peeled not more than 0.08 percent m/m.

3.3 Classification of “defectives”

A container that fails to meet the applicable quality requirements as set out in Section 3.2 shall be considered a defective.

3.4 Acceptance

A lot will be considered as meeting requirements for quality criteria when the number of “defectives” as defined in Section 3.3 does not exceed the acceptance number (c) of an appropriate sampling plan with an acceptable quality limit (AQL) of 6.5, (see relevant Codex texts on methods of analysis and sampling).

4. FOOD ADDITIVES**4.1 Solubilizing and dispersing agents****Maximum level**

Polysorbate 80 (polyoxyethylene 20 sorbitan monooleate)	}
Xanthan gum	}
Gum arabic	} 500 mg/kg singly or in combination
Alginate (Ca, NH ₄ , Na, K)	}
Propylene glycol alginate	}
Carrageenan	}

4.2 Firming Agents

Calcium chloride, lactate and gluconate	} 250 mg/kg singly or in combination
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4.3 Preservatives

Sulphur dioxide (as a carryover from raw product)	} 50 mg/kg
Benzoic acid and its sodium and potassium salts	} 1 000 mg/kg singly or in combination
Potassium sorbate	}

4.4 Colouring matters

101(i)	Riboflavin, synthetic	GMP
101(ii)	Riboflavin 5'-phosphate, sodium	
101(iii)	Riboflavin from <i>Bacillus subtilis</i>	
101(iv)	Riboflavin from <i>Ashbya gossypii</i>	

Fast green FCF	}
Chlorophyll copper complex	} 300 mg/kg singly or in combination
Tartrazine	}
Annatto extract	}
Turmeric	}
Sunset yellow FCF	}

160a(i), 160a(iii), 160a(iv)	Beta-Carotenes	5 mg/kg, expressed as beta-Carotene, singly or in combination: Beta-Carotenes (beta-carotenes, synthetic (INS 160a(i)), beta-carotenes, <i>Blakeslea trispora</i> (INS 160a(iii)), beta-Carotene-Rich Extract from <i>Dunaliella salina</i> (INS 160a(iv)) and beta-carotenes, vegetable (INS 160a(ii))
160a(ii)	Carotenes, beta-, vegetable	

Beta-carotene	}
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Oleoresin of paprika	}
Brilliant blue FCF	}
Caramel, plain	}
Caramel (ammonium sulphite treated)	}

4.5 Thickening agents (in mustard type only)

Guar gum	}
Gum Arabic	} Limited by good manufacturing practices (GMP)
Carob bean (Locust bean) gum	}
Tamarind seed polysaccharide	}

4.6 Acidifiers

Acetic acid	}
Lactic acid	} Limited by GMP
Malic acid	}
Citric acid	}

4.7 Flavourings

Natural and synthetic flavourings	} Limited by GMP
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5. CONTAMINANTS

Tin (Sn)	250 mg/kg, calculated as Sn
Lead (Pb)	1 mg/kg

6. HYGIENE

6.1 It is recommended that the product 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),¹ and other codes of practice recommended by the Codex Alimentarius Commission which are relevant to this product.

6.2 To the extent possible in GMP, the product shall be free from objectionable matter.

6.3 When tested by appropriate methods of sampling and examination, the product:

- shall be free from microorganisms in amounts which may represent a hazard to health;
- shall be free from parasites which may represent a hazard to health; and
- shall not contain any substance originating from microorganisms in amounts which may represent a hazard to health.

7. WEIGHTS AND MEASURES**7.1 Fill of container****7.1.1 Minimum fill** (pickles plus packing medium)

The containers shall be well filled with cucumbers and the product (including packing medium) shall occupy not less than 90 percent 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 the completely filled.

7.1.2 Minimum volume fill for whole and whole curved styles

The cucumber ingredient shall occupy not less than 55 percent for cured type and 53 percent for fresh pack type of the total capacity (volume) of the container.

7.1.3 Minimum volume fill for all styles except whole

The vegetable and fruit ingredient in styles other than whole shall occupy:

- (a) not less than 55 percent in the case of fresh pack; and
- (b) not less than 57 percent in the case of cured, of the total capacity (volume) of the container.

7.2 Acceptance

The requirements for fill of container (as specified in Section 7.1) shall be deemed to be complied with when the average from all containers is not less than the minimum required, provided that there is no unreasonable shortage in individual containers.

8. LABELLING

In addition to the requirements of the *General standard for the labelling of pre-packaged foods* (CXS 1-1985),² the following specific provisions apply:

8.1 Name of the food

8.1.1 The name of the product is: "Pickled cucumbers", "Cucumber pickles", "Pickles" or "Gherkins".

8.1.2 The following shall be included in close proximity to the name of the product:

- (a) the type of pack, e.g. "Fresh pack" or "Cured pack";
- (b) the style of pack and the subtype, including the name of the herb in relation to subtype in Section 2.2.3 (b);
- (c) the subtype "dill" which may be declared "natural dill" or "genuine dill" when the cucumbers are fermented naturally in a low salt concentration brine; and
- (d) in whole style, the approximate count range in containers larger than four litres.

8.1.3 If the product is produced in accordance with the other styles provision (Section 1.3), the label shall contain in close proximity to the name of the product such additional words or phrases that will avoid misleading or confusing the consumer.

8.2 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).³

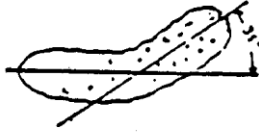
9. METHODS OF ANALYSIS AND SAMPLING

For checking compliance with this standard, the methods of analysis and sampling contained in the *Recommended methods of analysis and sampling* (CXS 234-1999)⁴ relevant to the provisions in this standard shall be used.

ANNEX I

VISUAL AID ILLUSTRATING CURVED AND MISSHAPEN CUCUMBERS

- (a) **Curved cucumber.** A curved cucumber is one that is curved at an angle of 35 degrees or more, when measured as illustrated.



- (b) **Misshapen cucumbers.** Misshapen cucumbers include crooked, nubbins, and otherwise misshapen cucumbers. A nubbin cucumber is one that is not cylindrical in form, is short and stubby, or is not well developed. Nubbins and otherwise misshapen cucumbers are similar to the following illustrations:



NOTES

¹ FAO and WHO. 1969. *General principles of food hygiene*. Codex Alimentarius Code of Practice, No. CXC 1-1969. Codex Alimentarius Commission. Rome.

² FAO and WHO. 1985. *General standard for the labelling of pre-packaged foods*. Codex Alimentarius Standard, No. CXS 1-1985. Codex Alimentarius Commission. Rome.

³ FAO and WHO. 2021. *General standard for the labelling of non-retail containers of foods*. Codex Alimentarius Standard, No. CXS 346-2021. Codex Alimentarius Commission. Rome.

⁴ FAO and WHO. 1999. *Recommended methods of analysis and sampling*. Codex Alimentarius Standard, No. CXS 234-1999. Codex Alimentarius Commission. Rome.