

C O D E X A L I M E N T A R I U S

INTERNATIONAL FOOD STANDARDS



**Food and Agriculture
Organization of
the United Nations**



**World Health
Organization**

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STANDARD FOR JAMS, JELLIES AND MARMALADES

CXS 296-2009

Adopted in 2009. Amended in 2017.

**This Standard supersedes individual standards for
citrus marmalade (CXS 80-1981) and
jams (fruit preserves) and jellies (CXS 79-1981).**

1. SCOPE

1.1 This Standard applies to jams, jellies and marmalades, as defined in Section 2 below, and offered for direct consumption, including for catering purposes or for repacking if required. This Standard does not apply to:

- (a) products when indicated as being intended for further processing such as those intended for use in the manufacture of fine bakery wares, pastries or biscuits;
- (b) products which are clearly intended or labelled as intended for special dietary uses;
- (c) reduced sugar products or those with a very low sugar content;
- (d) products where the foodstuffs with sweetening properties have been replaced wholly or partially by food additive sweeteners.

1.2 The terms, “preserve” or “conserve” are sometimes used to represent products covered by this Standard. The use of the terms “preserve” and “conserve” are thereby required to comply with the requirements for jam and/or extra jam as set out in this Standard.

2. DESCRIPTION

2.1 Product definitions

Product	Definition
Jam¹	is the product brought to a suitable consistency, made from the whole fruit, pieces of fruit, the unconcentrated and/or concentrated fruit pulp or fruit puree, of one or more kinds of fruit, which is mixed with foodstuffs with sweetening properties as defined in Section 2.2, with or without the addition of water.
Jellies	are the products brought to a semi solid gelled consistency and made from the juice and/or aqueous extracts of one or more fruits, mixed with foodstuffs with sweetening properties as defined in Section 2.2, with or without the addition of water.
Citrus Marmalade	is the product obtained from a single or a mixture of citrus fruits and brought to a suitable consistency. It may be made from one or more of the following ingredients: whole fruit or fruit pieces, which may have all or part of the peel removed, fruit pulp, puree, juice, aqueous extracts and peel and is mixed with foodstuffs with sweetening properties as defined in Section 2.2, with or without the addition of water.
Non Citrus Marmalade	is the product prepared by cooking fruit, whole, in pieces, or crushed adding foodstuffs with sweetening properties as defined in Section 2.2 to obtain a semi-liquid or thick liquid.
Jelly Marmalade	is the product described under citrus marmalade from which all the insoluble solids have been removed but which may or may not contain a small proportion of thinly cut peel.

2.2 Other Definitions

For the purposes of this Standard the following definitions shall also apply:

Product	Definition
Fruit	Means all of the recognised fruits and vegetables that are used in making jams, including but not limited to those fruits mentioned in this Standard, either fresh, frozen, canned, concentrated, dried, or otherwise processed and/or preserved which shall be sound, wholesome and clean and of suitable ripeness but free from deterioration and containing all its essential characteristics except that it has been trimmed, sorted and otherwise treated to remove any blemishes, bruises, toppings, tailings, cores, pits (stones) and may or may not be peeled.
Fruit Pulp	The edible part of the whole fruit, if appropriate less the peel, skin, seeds, pips, etc., which may have been sliced or crushed but which has not been reduced to a puree.
Fruit Puree	The edible part of the whole fruit, if appropriate, less the peel, skin, seeds pips and similar which has been reduced to a puree by sieving or other processes.

¹ Citrus jam may be obtained from the whole fruit cut into strips and/or sliced.

Product	Definition
Aqueous extracts	The aqueous extract of fruits which subject to losses necessarily occurring during proper manufacture, contains all the water-soluble constituents of the fruit concerned.
Fruit Juices and concentrates	Products as defined in the <i>General Standard for Fruit Juices and Nectars</i> (CXS 247-2005).
Citrus fruit	Fruit of the Citrus L. family.
Foodstuffs with sweetening properties	<p>(a) All sugars as defined in the <i>Standard for Sugars</i> (CXS 212-1999);</p> <p>(b) Sugars extracted from fruit (fruit sugars);</p> <p>(c) Fructose syrup;</p> <p>(d) Brown sugar;</p> <p>(e) Honey as defined in the <i>Standard for Honey</i> (CXS 12-1981).</p>

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Composition

3.1.1 Basic Ingredients

- (a) Fruit ingredient, as defined in Section 2.2, in quantities laid down in Sections 3.1.2 (a) – (d) below.

In the case of jellies the quantities where appropriate shall be calculated after deduction of the weight of water used in preparing the aqueous extracts.

- (b) Foodstuffs with sweetening properties as defined in Section 2.2.

3.1.2 Fruit Content

The following percentage fruit content for jams and jellies specified at 3.1.2 (a) or 3.1.2 (b) below shall apply and labelled in accordance with Section 8.2:

- (a) The products, as defined in Section 2.1, shall be produced such that the quantity of fruit ingredient used as a percentage of finished product shall be not less than 45% in general, with the exception of the following fruits:
- 35% for blackcurrants, mangoes, quinces, rambutan, redcurrants, rosehips, roselles, rowanberries and sea-buckthorns;
 - 30% for soursop and cranberry;
 - 25% for banana, cempedak, ginger, guava, jackfruit and sappota;
 - 23% for cashew apples;
 - 20% for durian;
 - 10% for tamarind;
 - 8% for passion fruit and other strong flavoured or high acidity fruits.²

When fruits are mixed together, the minimum content must be reduced in proportion to the percentages used.

or

- (b) The products, as defined in Section 2.1, shall be produced such that the quantity of fruit ingredient used as a percentage of finished product shall be not less than 35% in general, with the exception of the following fruits:

² Fruits when used at higher percentages, could render the product unpalatable in accordance with consumers preferences in the country of retail sale.

- 25% for blackcurrants, mangoes, quinces, rambutan, redcurrants, rosehips, roselles, rowanberries and sea-buckthorns;
- 20% for soursop and cranberry;
- 16% for cashew apples;
- 15% for banana, cempedak, guava, jackfruit and sappota;
- 11% - 15% for ginger;
- 10% for durian;
- 6% for passion fruit, tamarind or other strong flavoured or high acidity fruits.²

When fruits are mixed together, the minimum content must be reduced in proportion to the percentages used.

In the case of Labrusca grape jam, grape juice and grape juice concentrate when added as optional ingredients, this may constitute a part of the required fruit content.

(c) **Citrus Marmalade**

The product, as defined in Section 2.1, shall be produced such that the quantity of citrus fruit ingredients used in the manufacturing of 1000 g of finished product must not be less than 200 g of which at least 75 g must be obtained from the endocarp³.

In addition the term "jelly marmalade" as defined in Section 2.1 may be used when the product contains no insoluble matter but may contain small quantities of thinly cut peel.

(d) **Non Citrus Marmalade**

The product, as defined in Section 2.1, shall be produced such that the quantity of fruit ingredient used as a percentage of the finished product shall not be less than 30% in general, with the exception of the following fruits:

- 11% for ginger.

3.1.3 Other Permitted Ingredients

Any appropriate food ingredient of plant origin may be used in the products covered by this Standard. This includes fruit, herbs, spices, nuts, alcoholic drinks and essential oils and vegetable edible oils and fats (used as antifoaming agents), as long as they do not mask poor quality and mislead the consumer. For example, red fruit juice and red beetroot juice may only be added to jams as defined in points 3.1.2 (a) and (b) made from gooseberries, plums, raspberries, redcurrants, rhubarb, rosehips, roselle or strawberries.

3.2 Soluble Solids

The soluble solids content for the finished products defined in Sections 3.1.2 (a) – (c) shall in all cases be between 60 to 65% or greater.⁴ In the case of the finished product defined in Section 3.1.2 (d), the soluble solids content shall be 40 - 65% or less.

3.3 Quality Criteria

3.3.1 General Requirements

The end product shall be of an appropriate gelled consistency, having normal colour and flavour appropriate to the type or kind of fruit ingredient used in the preparation of the mixture, while taking into account any flavour imparted by optional ingredients or any permitted colouring agents used. It shall be free from defective materials normally associated with fruits. Jelly and extra jelly shall be reasonably clear or transparent.

3.3.2 Defects and Allowances for Jams

The products covered by this Standard shall be largely free of defects such as plant material skins (if peeled), stones and pieces of stones and mineral matters. In the case of berry fruits, Dragon fruit and passion fruit, seeds shall be considered a natural fruit component and not a defect unless the product is presented as "seedless".

³ In the case of citrus fruit the endocarp means the fruit pulp (or flesh) which is often subdivided into segments and vesicas containing the juices and the seeds

⁴ In accordance with the legislation of the country of retail sale.

3.4 Classification of “defectives”

A container that fails to meet one or more of the applicable quality requirements as set out in Section 3.3.1 should be considered as a “defective”.

3.5 Lot Acceptance

A lot should be considered as meeting the applicable quality requirements referred to in Section 3.3.1 when the number of “defectives” as defined in Section 3.4 does not exceed the acceptance number (c) of the appropriate sampling plan with an AQL of 6.5.

4. FOOD ADDITIVES

Only those food additive classes listed below are technologically justified and may be used in products covered by this Standard. Within each additive class only those food additives listed below, or referred to, may be used and only for the functions, and within limits, specified.

4.1 Acidity regulators, antifoaming agents, firming agents, preservatives and thickeners used in accordance with Table 3 of the *General Standard for Food Additives* (CXS 192-1995) are acceptable for use in foods conforming to this Standard.

4.2 Acidity Regulators

INS No.	Name of the Food Additive	Maximum Level
334; 335(i), (ii); 336(i), (ii); 337	Tartrates	3,000 mg/kg

4.3 Antifoaming Agents

INS No.	Name of the Food Additive	Maximum Level
900a	Polydimethylsiloxane	10 mg/kg

4.4 Colours

INS No.	Name of the Food Additive	Maximum Level
100(i)	Curcumin	500 mg/kg
101(i), (ii)	Riboflavins	200 mg/kg
104	Quinoline Yellow	100 mg/kg
110	Sunset Yellow FCF	300 mg/kg
120	Carmines	200 mg/kg
124	Ponceau 4R (Cochineal Red A)	100 mg/kg
129	Allura Red AC	100 mg/kg
133	Brilliant Blue FCF	100 mg/kg
140	Chlorophylls	GMP
141(i), (ii)	Chlorophylls and Chlorophyllins, Copper Complexes	200 mg/kg
143	Fast Green FCF	400 mg/kg
150a	Caramel I – Plain Caramel	GMP
150b	Caramel II - Sulfite Caramel	80,000 mg/kg
150c	Caramel III - Ammonia Caramel	80,000 mg/kg
150d	Caramel IV - Sulfite Ammonia Caramel	1,500 mg/kg
160a(i)	Carotenes, <i>beta</i> -, synthetic	500 mg/kg

INS No.	Name of the Food Additive	Maximum Level
160a(iii)	Carotenes, <i>beta</i> -, <i>Blakeslea trispora</i>	singly or in combination
160e	Carotenal, <i>beta</i> -apo-8'-	
160f	Carotenoic acid, ethyl ester, <i>beta</i> -apo-8'-	
160a(ii)	Carotenes, <i>beta</i> -, vegetable	1,000 mg/kg
160d(i), 160d(iii)	Lycopenes	100 mg/kg
161b(i)	Lutein from <i>Tagetes erecta</i>	100 mg/kg
162	Beet Red	GMP
163(ii)	Grape Skin Extract	500 mg/kg
172(i)-(iii)	Iron Oxides	200 mg/kg

4.5 Preservatives

INS No.	Name of the Food Additive	Maximum Level
200-203	Sorbates	1,000 mg/kg
210-213	Benzoates	1,000 mg/kg
220-225, 539	Sulfites	50 mg/kg as residual SO ₂ in the end product, except when made with sulfited fruit when a maximum level of 100 mg/kg is permitted in the end product.

4.6 Flavourings

The following flavourings are acceptable for use in foods conforming to this Standard when used in accordance with good manufacturing practices and in compliance with the Codex Guidelines for the Use of Flavourings (CXG 66-2008): natural flavourings that are extracted from the named fruits in the respective product; natural mint flavouring; natural cinnamon flavouring; vanillin, vanilla or vanilla extracts.

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).
- 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) 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).

7. WEIGHTS AND MEASURES

7.1 Fill of container

7.1.1 Minimum Fill

The container should be well filled with the product 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 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.

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 Prepackaged Foods* (CXS 1-1985). In addition, the following specific provisions apply:

8.2 **Name of the Product**

8.2.1 The names of the products shall be:

In the case of Section 3.1.2 (a):

- Jam (or preserve or conserve, if appropriate)⁵;
- Extra Jam (preserve or conserve, if appropriate)⁵;
- High Fruit Jam (preserve or conserve, if appropriate)⁵;
- Jelly;
- Extra Jelly.

In the case of Section 3.1.2 (b):

- Jam (or preserve⁵ or conserve⁵ or fruit spread);
- Jelly (or fruit spread).

In the case of Section 3.1.2 (c):

- Marmalade or Jelly Marmalade.

In the case of Section 3.1.2 (d):

- “X” marmalade (“X” is a non citrus fruit).

The name used should be in accordance with the legislation of the country of retail sale.

8.2.2 The name of the product shall provide an indication of the fruit(s) used in descending order of weight of the raw material used. In the case of products made with three or more different fruits the alternative phrase “mixed fruit” or similar wording or by the number of fruits may be used.

8.2.3 The name of the product may provide an indication of the variety of fruit e.g. “Victoria” plum and /or may include an adjective describing the character e.g. “seedless”, “shredless”.

8.2.4 The name of the product shall be accompanied by the term “prepared with added alcohol” in accordance with the legislation of the country of retail sale.

8.3 **Fruit Quantity and Sugar Declaration**

Depending on the legislation or requirements of the country of retail sale, the products covered by this Standard may also give an indication of the fruit ingredient content in the form of “prepared with X g of fruit per 100 g” and the total sugar content with the phrase “total sugar content X g per 100 g”. If an indication of fruit content is given this should relate to the quantity and type of fruit ingredient used in the product as sold with a deduction for the weight of any water used in preparing the aqueous extracts.

⁵ The provision in parenthesis applies only to the English version of the Standard.

8.4 Labelling of Non-Retail Containers

Information for non-retail containers shall be given either on the container or in accompanying documents, except that the name of the product, lot identification, and the name and address of the manufacturer, packer, distributor or importer, as well as storage instructions, shall appear on the container. 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.

9. METHODS OF ANALYSIS AND SAMPLING

Provision	Method	Principle	Type
Fill of containers	CAC/RM 46-1972 (Codex General Method for processed fruits and vegetables)	Weighing	I
Fill of containers in metal containers	ISO 90.1:1999	Weighing	I
Soluble solids	AOAC 932.14C ISO 2173:2003 (Codex General Method for processed fruits and vegetables)	Refractometry	I

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.

Sampling Plans

The appropriate inspection level is selected as follows:

Inspection level I - Normal Sampling

Inspection level II - Disputes, (Codex referee purposes sample size), enforcement or need for better lot estimate

SAMPLING PLAN 1

(Inspection Level I, AQL = 6.5)

NET WEIGHT IS EQUAL TO OR LESS THAN 1 KG (2.2 LB)		
Lot Size (N)	Sample Size (n)	Acceptance Number (c)
4,800 or less	6	1
4,801 - 24,000	13	2
24,001 - 48,000	21	3
48,001 - 84,000	29	4
84,001 - 144,000	38	5
144,001 - 240,000	48	6
more than 240,000	60	7
NET WEIGHT IS GREATER THAN 1 KG (2.2 LB) BUT NOT MORE THAN 4.5 KG (10 LB)		
Lot Size (N)	Sample Size (n)	Acceptance Number (c)
2,400 or less	6	1
2,401 - 15,000	13	2
15,001 - 24,000	21	3
24,001 - 42,000	29	4
42,001 - 72,000	38	5
72,001 - 120,000	48	6
more than 120,000	60	7
NET WEIGHT GREATER THAN 4.5 KG (10 LB)		
Lot Size (N)	Sample Size (n)	Acceptance Number (c)
600 or less	6	1
601 - 2,000	13	2
2,001 - 7,200	21	3
7,201 - 15,000	29	4
15,001 - 24,000	38	5
24,001 - 42,000	48	6
more than 42,000	60	7

SAMPLING PLAN 2
(Inspection Level II, AQL = 6.5)

NET WEIGHT IS EQUAL TO OR LESS THAN 1 KG (2.2 LB)		
Lot Size (N)	Sample Size (n)	Acceptance Number (c)
4,800 or less	13	2
4,801 - 24,000	21	3
24,001 - 48,000	29	4
48,001 - 84,000	38	5
84,001 - 144,000	48	6
144,001 - 240,000	60	7
more than 240,000	72	8
NET WEIGHT IS GREATER THAN 1 KG (2.2 LB) BUT NOT MORE THAN 4.5 KG (10 LB)		
Lot Size (N)	Sample Size (n)	Acceptance Number (c)
2,400 or less	13	2
2,401 - 15,000	21	3
15,001 - 24,000	29	4
24,001 - 42,000	38	5
42,001 - 72,000	48	6
72,001 - 120,000	60	7
more than 120,000	72	8
NET WEIGHT GREATER THAN 4.5 KG (10 LB)		
Lot Size (N)	Sample Size (n)	Acceptance Number (c)
600 or less	13	2
601 - 2,000	21	3
2,001 - 7,200	29	4
7,201 - 15,000	38	5
15,001 - 24,000	48	6
24,001 - 42,000	60	7
more than 42,000	72	8