

# CODEX ALIMENTARIUS

INTERNATIONAL FOOD STANDARDS



Food and Agriculture  
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World Health  
Organization

E-mail: [codex@fao.org](mailto:codex@fao.org) - [www.codexalimentarius.org](http://www.codexalimentarius.org)

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## STANDARD FOR CANNED STONE FRUITS

CXS 242-2003

Adopted in 2003. Amended in 2017, 2022, 2023.

**2022 Amendment**

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.

**2023 editorial correction**

An editorial correction was made to Section 3.2.1.6 in Table c) Canned plums/Canned cherries, first line to read 30% m/m instead of 30% m/m under Maximum limit in drained weight.

## 1. SCOPE

This standard applies to canned stone fruits of the genus *Prunus*,<sup>i</sup> as defined in Section 2 below, and offered for direct consumption, including for catering purposes or for repacking if required. It does not apply to the product when indicated as being intended for further processing.

## 2. DESCRIPTION

### 2.1 Product definition

Canned stone fruits is the product:

- (a) prepared from fresh or frozen or previously canned, mature stone fruits of commercial canning varieties of the genus *Prunus*, stemmed, pitted or unpitted, and conforming to the characteristics of the stone fruits suitable for human consumption;
- (b) packed with or without a suitable liquid packing medium, sugars and/or other carbohydrate sweeteners such as honey, and other permitted ingredients as indicated in Section 3.1.3 below; and
- (c) processed by heat, in an appropriate manner, before or after being hermetically sealed in a container, so as to prevent spoilage.

### 2.2 Species

The following species may be used:

#### 2.2.1 Apricot – *Prunus armeniaca* L.

#### 2.2.2 Peach – *Prunus persica* L.

#### 2.2.3 Plum

- (a) *Prunus cerasifera* Ehrb. (cherry plum);
- (b) *Prunus domestica* L. (plum);
- (c) *Prunus insititia* L. (mirabelle or damson); and
- (d) *Prunus italica* L. (greengage).

#### 2.2.4 Cherry

- (a) *Prunus avium* L. (sweet cherry including Bigarreaux); and
- (b) *Prunus cerasus* L., var. *austera* L. (sour cherry including griottes).

### 2.3 Varietal type

Distinct varietal types should be designated for peaches, plums and cherries.

#### 2.3.1 Peach

##### 2.3.1.1 Type by the ease of separation of pit

- (a) **clingstone** – where the pit adheres to the flesh; or
- (b) **freestone** – where the pit separates readily from the flesh.

##### 2.3.1.2 Type by colour

- (a) **green** – varietal types in which the predominant colour of the flesh of the ripe fruit ranges from pale green to green when fully ripe;
- (b) **red** – varietal types in which the predominant colour of the flesh of the ripe fruit ranges from pale yellow to orange red and with variegated red colouring other than that associated with the pit cavity;
- (c) **white** – varietal types in which the predominant colour of the flesh of the ripe fruit ranges from white to yellow-white; and

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<sup>i</sup> Only applies to stone fruits of the genus *Prunus*.

- (d) **yellow** – varietal type in which the predominant colour of the flesh of the ripe fruit ranges from pale yellow to rich red orange.

### 2.3.2 Plum

- (a) Cherry plums
- (b) Greengages
- (c) Mirabelles
- (d) Purple plums
- (e) Quetsches
- (f) Red plums
- (g) Yellow plums

### 2.3.3 Cherries

- (a) Sour (Griottes)
- (b) Sweet dark
- (c) Sweet light (Bigarreaux)

## 2.4 Styles

### 2.4.1 Peaches shall be peeled.

2.4.2 **Whole** – unpitted or pitted whole fruit.

2.4.3 **Halves** – pitted and cut into two approximately equal parts.<sup>ii</sup>

2.4.4 **Quarters** – pitted and cut into four approximately equal parts.

2.4.5 **Slices** – pitted and cut into wedge shaped sectors.

2.4.6 **Dices** – pitted and cut into cube-like parts.

2.4.7 **Pieces** (or mixed pieces or irregular pieces) – pitted and comprising irregular shapes and sizes.

2.4.8 In addition, solid pack of apricots may be prepared using a combination of both peeled and unpeeled apricots in the same pack.

## 3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

### 3.1 Composition

#### 3.1.1 Basic ingredients

Stone fruits as defined in Section 2 and liquid packing medium appropriate to the product.

#### 3.1.2 Packing media

In accordance with the *Guidelines for Packing Media for Canned Fruits* (CXG 51-2003).<sup>1</sup>

#### 3.1.3 Other permitted ingredients

- (a) spices
- (b) vinegar

### 3.2 Quality criteria

Canned stone fruits shall have normal flavour, odour and colour and shall possess a texture characteristic of the product. The product shall be substantially free from pits or pieces of pit if greater than 2 mm in dimension, except in the case that the product is unpitted.

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<sup>ii</sup> For the confectionary industry, peaches and apricots should be cut along the natural suture from the stem to the apex.

### 3.2.1 *Other quality criteria*

#### 3.2.1.1 *Colour*

The colour of the product, except for that of artificially coloured canned plums or cherries should be normal for the varietal type of the fruit used. Canned stone fruit containing special ingredients should be considered to be of characteristic colour when there is no abnormal discolouration for the respective ingredient used.

Portions of peaches which are obviously near or part of the pit cavity and which after canning may become slightly discoloured are considered to be normal characteristic colour.

#### 3.2.1.2 *Flavour*

The product should have a normal flavour or odour free from flavours and odours foreign to the product. The product with special ingredients should have a flavour characteristic of that imparted by the fruit canned and the other substances used.

#### 3.2.1.3 *Texture*

The canned fruit should be reasonably fleshy of uniform texture and may be variable in tenderness, but should neither be mushy nor excessively firm.

#### 3.2.1.4 *Uniformity of size*

The fruit should be reasonably uniform in size.

#### 3.2.1.5 *Definition of defects*

- (a) **Blemishes** – means surface discolouration and spots arising from physical, pathological, insect or other agents that definitely contrast with the overall colour and which may penetrate into the flesh. Examples include bruises, scabs and dark discolouration.
- (b) **Crushed or broken** – considered a defect only in whole or halved canned fruits in liquid media pack; means a unit which has been crushed to the extent that it has lost its normal shape (not due to ripeness) or has been severed into definite parts. Halves partially split from the edge to the pit cavity and whole apricots split along the suture are not considered broken. All portions that collectively equal the size of a full-size unit are considered one unit in applying the allowance herein. In the case of plums and cherries blemishes should not seriously affect the appearance of the products.
- (c) **Harmless extraneous material** – means any vegetable substance (such as, but not limited to, a leaf or portion thereof, or a stem) that is harmless, and which tends to detract from the appearance of the product.
- (d) **Peel** – considered as a defect except in “unpeeled” styles; means peel that adheres to the fruit flesh or is found loose in the container.
- (e) **Pit (or stone) material** – considered a defect in all styles except whole; means whole pits and pieces that are hard and sharp.
- (f) **Split** (cherries and plums) – any split that seriously affect the appearance of the product.
- (g) **Trim** – considered a defect only in whole and halved canned fruits in liquid media packs. The trimming must be excessive and includes serious gouges (whether due to physical trimming or other means) on the surface of the units which definitely detract from the appearance.

#### 3.2.1.6 *Defects and allowances*

The product should be substantially free from defects such as extraneous material, pit (stone) material, peel (in peeled styles only), blemished units, and broken units. Certain common defects should not be present in amounts greater than the following limitations:

**(a) Canned apricots**

Defects	Maximum limit in drained weight	
	Liquid media packs	Solid pack
(i) Blemish and trim	30% by count	3 units per 500 g
(ii) Broken (whole, halves)	15% by count	not applicable
(iii) Total of the foregoing defects	35% by count	Not applicable
(iv) Harmless extraneous material	2 pieces per 500 g	3 pieces per 500 g
(v) Peel (average in peeled styles only)	No not more than 6 cm <sup>2</sup> aggregate area per 500 g	Not more than 12 cm <sup>2</sup> aggregate area per 500 g
(vi) Pit or pit material (average)	1 pit or its equivalent <sup>iii</sup> per 500 g	1 pit or its equivalent <sup>iii</sup> per 500 g

**(b) Canned Peaches**

Defects	Maximum limit in drained weight	
	Liquid media packs	Solid pack
(i) Blemish and trim	30% by count	3 units per 500 g
(ii) Broken (whole, halves, quarters)	5% by count	not applicable
(iii) Total of the foregoing defects	32% by count	Not applicable
(iv) Peel (average)	Not more than 15 cm <sup>2</sup> aggregate area per kg	Not more than 30 cm <sup>2</sup> aggregate area per kg
(v) Pit or pit material (average)	1 pit or its equivalent <sup>iii</sup> per 5 kg	1 pit or its equivalent <sup>iii</sup> per 5 kg

**(c) Canned plums/Canned cherries**

Defects	Maximum limit in drained weight
(i) Blemish	30% m/m
(ii) Broken (whole, halves)	25% m/m
(iii) Total of the foregoing defects	35% m/m
(iv) Extraneous plant material	1 piece per 200 g (based on averages)
(v) Loose pits (whole)	3 per 500 g (based on averages)
(vi) Pit or pieces of pits (whole, halves)	2 per 500 g (based on averages)

**3.3 Classification of “defectives”**

A container that fails to meet one or more of the applicable quality requirements, as set out in Sections 3.2.1.1 through 3.2.1.6 (except peel and pit material which are based on an average), should be considered as a “defective”.

<sup>iii</sup> One pit for this allowance is: one whole pit; or one large piece, the equivalent of one-half pit or larger; or up to three small hard pieces, the total mass of which is smaller than one-half pit.

### 3.4 Lot acceptance

A lot should be considered as meeting the applicable quality requirements referred to in Section 3.3 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 an appropriate sampling plan with an acceptable quality level (AQL) of 6.5; and
- (b) the requirements, which are based on sample averages, are complied with.

## 4. FOOD ADDITIVES

### 4.1 Acidifying agents

INS No.	Name of the food additive	Maximum level
260	Acetic acid	Limited by good manufacturing practices (GMP)
270	Lactic acid	
296	Malic acid	
330	Citric acid	
334	Tartaric acid	1300 mg/kg

### 4.2 Antioxidants

INS No.	Name of the food additive	Maximum level
300	L-Ascorbic acid	Limited by GMP

### 4.3 Colours

INS No.	Name of the food additive	Maximum level
127	Erythrosine (for sweet cherries only)	200 mg/kg of the final product
129	Allura Red AC (for canned “red” or “purple” plums only)	

### 4.4 Flavourings

Natural and synthetic flavourings except those which reproduce the flavour of the respective stone fruit	Limited by GMP
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## 5. CONTAMINANTS

5.1 The product 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).<sup>2</sup>

5.2 The product 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)<sup>3</sup> 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).<sup>4</sup>

## 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) which should 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 completely filled.

#### 7.1.2 *Classification of “defectives”*

A container that fails to meet the requirement for minimum fill (90 percent container capacity) 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 an 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.<sup>iv</sup>

##### (a) **Canned apricots**

(i)	In heavily sweetened fruit juice(s) or nectar(s) “heavy” and “extra heavy” syrup	54%
(ii)	In lightly sweetened fruit juice(s) or nectar(s) “light” and “extra light” syrup	55%
(iii)	Solid pack	82%
(iv)	Whole fruits	46%

##### (b) **Canned peaches**

	<b>Clingstone type</b>	<b>Freestone type</b>	
(i)	In “heavy” and “extra heavy” syrup	57%	54%
(ii)	In “light” and “extra light” syrup	59%	56%
(iii)	Solid pack	84%	82%
(iv)	Whole fruits	52%	

##### (c) **Canned plum**

(i)	Whole styles	50%
(ii)	Halves styles	55%

##### (d) **Canned cherries**

All varieties	53%
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7.1.4.2 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.

<sup>iv</sup> 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.

## 8. LABELLING

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).<sup>5</sup> In addition, the following specific provisions apply:

### 8.1 Name of the product

8.1.1 The name of the product shall be the name of the fruit used as defined in Section 2.2.

8.1.2 The name of the product should include:

(a) the varietal type as appropriate:

- (i) **Peach:** “freestone” or “clingstone” as appropriate; and “yellow”, “white”, “red” or “green” as appropriate.
- (ii) **Plum:** “yellow” or “golden”, “red” or “purple” as appropriate; or specific name of the cultivars or “Greengage plums”, “Damson plums”, “Cherry plums”, “Mirabelle plums”, for the appropriate cultivars specified in Section 2.3.2 of this standard, except that the names “Greengages”, “Damsons”, “Mirabelles” and “Quetsches” need not be accompanied by the word “plums” in countries where its omission would not mislead or deceive the consumer.
- (iii) **Cherry:** the name of the cherry product should include the varietal type as appropriate/or the specific name of the cultivars specified in Section 2.3.3, except that the names “bigarreaux” and “griottes” need not be accompanied by the word “cherries” in countries where its omission would not mislead or deceive the consumer.

(b) The name should include a declaration of any flavouring which characterizes the product, e.g. “with X”, when appropriate.

8.1.3 The following, as appropriate, should be declared as part of the name or in close proximity to the name:

- (a) The style as defined in Section 2.4 of the standard.
- (b) A declaration of whether the fruits are “peeled” or “unpeeled”.

### 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).<sup>6</sup>

## 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)<sup>7</sup> relevant to the provisions in this standard shall be used.

## NOTES

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<sup>1</sup> FAO and WHO. 2003. *Guidelines for Packing Media for Canned Fruits*. Codex Alimentarius Guideline, No. CXG 51-2003. Codex Alimentarius Commission. Rome.

<sup>2</sup> 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.

<sup>3</sup> FAO and WHO. 1969. *General Principles of Food Hygiene*. Codex Alimentarius Code of Practice, No. CXC 1-1969. Codex Alimentarius Commission. Rome.

<sup>4</sup> 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.

<sup>5</sup> FAO and WHO. 1985. *Standard for the Labelling of Pre-packaged Foods*. Codex Alimentarius Standard, No. CXS 1-1985. Codex Alimentarius Commission. Rome.

<sup>6</sup> 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.

<sup>7</sup> FAO and WHO. 1999. *Recommended Methods of Analysis and Sampling*. Codex Alimentarius Standard, No. CXS 234-1999. Codex Alimentarius Commission. Rome.