

# CODEX ALIMENTARIUS

INTERNATIONAL FOOD STANDARDS



Food and Agriculture  
Organization of  
the United Nations



World Health  
Organization

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## STANDARD FOR CANNED SARDINES AND SARDINE-TYPE PRODUCTS

CXS 94 – 1981

Formerly CAC/RS 94-1978.

Adopted in 1981. Revised in 1995, 2007. Amended in 1979, 1989, 2011, 2013, 2016, 2018.

## 1. SCOPE

This standard applies to canned sardines and sardine-type products packed in water or oil or other suitable packing medium. It does not apply to speciality products where fish content constitute less than 50% m/m of the net contents of the can.

## 2. DESCRIPTION

### 2.1 Product Definition

Canned sardines or sardine type products are prepared from fresh or frozen fish of the following species:

- *Sardinapilchardus*
- *Sardinopsmelanostictus*, *S. neopilchardus*, *S. ocellatus*, *S. sagax*, *S. caeruleus*,
- *Sardinellaaurita*, *S. brasiliensis*, *S. maderensis*, *S. longiceps*, *S. gibbosa*
- *Clupeaharengus*
- *Clupeabentincki*
- *Sprattussprattus*
- *Hyperlophusvittatus*
- *Nematalosavlaminghi*
- *Etrumeusteres*
- *Ethmidiummaculatum*
- *Engraulisanchoita*, *E. mordax*, *E. ringens*
- *Opisthonemaoglinum*

Head and gills shall be completely removed; scales and/or tail may be removed. The fish may be eviscerated. If eviscerated, it shall be practically free from visceral parts other than roe, milt or kidney. If gutted, it shall be practically free from undigested feed or used feed.

### 2.2 Process Definition

The products are packed in hermetically sealed containers and shall have received a processing treatment sufficient to ensure commercial sterility.

### 2.3 Presentation

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

- (i) contains at least two fish in each can; and
- (ii) meets all requirements of this standard; and
- (iii) is adequately described on the label to avoid confusing or misleading the consumer;
- (iv) contains only one fish species.

## 3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

### 3.1 Raw material

The products shall be prepared from sound fish of the species listed under sub-Section 2.1 which are of a quality fit to be sold fresh for human consumption.

### 3.2 Other Ingredients

The packing medium and all other ingredients used shall be of food grade quality and conform to all applicable Codex standards.

### 3.3. Decomposition

The products shall not contain more than 10 mg/100 g of histamine based on the average of the sample unit tested.

### 3.4 Final Product

Products shall meet the requirements of this Standard when lots examined in accordance with Section 9 comply with provisions set out in Section 8. Product shall be examined by the methods given in Section 7.

#### 4. FOOD ADDITIVES

Only certain Table 3 acidity regulators, emulsifiers, gelling agents, stabilizers and thickeners as indicated in Table 3 of the [General Standard for Food Additives \(CXS 192-1995\)](#) are acceptable for use in foods conforming to this Standard.

The flavourings used in products covered by this standard should comply with the [Guidelines for the Use of Flavourings \(CXG 66-2008\)](#). Only natural flavouring substances, natural flavouring complexes and smoke flavourings are permitted in products covered by this Standard.

#### 5. HYGIENE AND HANDLING

It is recommended that the products covered by the provisions in the Standard be prepared and handled in accordance with the appropriate sections of the [General Principles of Food Hygiene \(CXC 1-1969\)](#), the [Code of Practice for Fish and Fishery Products \(CXC 52-2003\)](#), the [Code of Hygienic Practice for Low-Acid and Acidified Low-Acid Canned Foods \(CXC 23-1979\)](#) and other relevant Codex Codes of Hygienic Practice and Codes of Practice.

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 \(CXG 21-1997\)](#).

When tested by appropriate methods of sampling and examination as prescribed by the Codex Alimentarius Commission, the product:

- (i) shall be free from micro-organisms capable of development under normal conditions of storage;
- (ii) no sample unit shall contain histamine that exceeds 20 mg per 100 g;
- (iii) shall not contain any other substance including substances derived from microorganisms in amounts which may represent a hazard to health in accordance with standards established by the Codex Alimentarius Commission;
- (iv) shall be free from container integrity defects which may compromise the hermetic seal.

#### 6. LABELLING

In addition to the provisions of the [General Standard for the Labelling of Prepackaged Foods \(CXS 1-1985\)](#) the following specific provisions apply:

##### 6.1 Name of the Food

The name of the product shall be:

- (i) "Sardines" (to be reserved exclusively for *Sardinapilchardus* (Walbaum)); or
- (ii) "X sardines" where "X" is the name of a country, a geographic area, the species, or the common name of the species, or any combination of these elements in accordance with the law and custom of the country in which the product is sold, and in a manner not to mislead the consumer.

The name of the packing medium shall form part of the name of the food.

If the fish has been smoked or smoke flavoured, this information shall appear on the label in close proximity to the name.

In addition, the label shall include other descriptive terms that will avoid misleading or confusing the consumer.

#### 7. SAMPLING, EXAMINATION AND ANALYSES

##### 7.1 Sampling

- (i) Sampling of lots for examination of the final product as prescribed in Section 3.4 shall be in accordance with an appropriate sampling plan with an AQL of 6.5;
- (ii) Sampling of lots for examination of net weight and drained weight where appropriate shall be carried out in accordance with an appropriate sampling plan meeting the criteria established by the CAC.

##### 7.2 Sensory and Physical Examination

Samples taken for sensory and physical examination shall be assessed by persons trained in such examination and in accordance with Annex A and the [Guidelines for the Sensory Evaluation of Fish and Shellfish in Laboratories \(CXG 31 - 1999\)](#).

### 7.3 Determination of Net Weight

Net contents of all sample units shall be determined by the following procedure:

- (i) Weigh the unopened container.
- (ii) Open the container and remove the contents.
- (iii) Weigh the empty container, (including the end) after removing excess liquid and adhering meat.
- (iv) Subtract the weight of the empty container from the weight of the unopened container. The resultant figure will be the net content.

### 7.4 Determination of Drained Weight

The drained weight of all sample units shall be determined by the following procedure:

- (i) Maintain the container at a temperature between 20°C and 30°C for a minimum of 12 hours prior to examination.
- (ii) Open and tilt the container to distribute the contents on a pre-weighed circular sieve which consists of wire mesh with square openings of 2.8 mm x 2.8 mm.
- (iii) Incline the sieve at an angle of approximately 17-20° and allow the fish to drain for two minutes, measured from the time the product is poured into the sieve.
- (iv) Weigh the sieve containing the drained fish.
- (v) The weight of drained fish is obtained by subtracting the weight of the sieve from the weight of the sieve and drained product.

### 7.5 Procedure for Packs in Sauces (washed drained weight)

- (i) Maintain the container at a temperature between 20°C and 30°C for a minimum of 12 hours prior to examination.
- (ii) Open and tilt the container and wash the covering sauce and then the full contents with hot tap water (approx. 40°C), using a wash bottle (e.g. plastic) on the tared circular sieve.
- (iii) Wash the contents of the sieve with hot water until free of adhering sauce; where necessary separate optional ingredients (spices, vegetables, fruits) with pincers. Incline the sieve at an angle of approximately 17-20° and allow the fish to drain two minutes, measured from the time the washing procedure has finished.
- (iv) Remove adhering water from the bottom of the sieve by use of paper towel. Weigh the sieve containing the washed drained fish.
- (v) The washed drained weight is obtained by subtracting the weight of the sieve from the weight of the sieve and drained product.

### 7.6 Determination of histamine

Methods meeting the following method performance criteria may be used:

| ML (mg/100g)   | Minimum applicable range (mg/100 g) | LOD (mg/100 g) | LOQ (mg/100g) | RSDR (%) | Recovery | Applicable methods that meet the criteria     |
|----------------|-------------------------------------|----------------|---------------|----------|----------|---|
| 10 (average)   | 8 – 12                              | 1              | 2             | 16.0     | 90 – 107 | AOAC 977.13   NMKL 99, 2013<br>NMKL 196, 2013 |
| 20 (each unit) | 16 – 24                             | 2              | 4             | 14.4     | 90 – 107 | AOAC 977.13   NMKL 99, 2013<br>NMKL 196, 2013 |

## 8. DEFINITION OF DEFECTIVES

A sample unit will be considered defective when it exhibits any of the properties defined below.

### 8.1 Foreign Matter

The presence in the sample unit of any matter, which has not been derived from the fish or the packing media, does not pose a threat to human health, and is readily recognized without magnification or is present at a level determined by any method including magnification that indicates non-compliance with good manufacturing and sanitation practices.

**8.2 Odour/Flavour**

A sample unit affected by persistent and distinct objectionable odours or flavours indicative of decomposition or rancidity.

**8.3 Texture**

- (i) Excessively mushy flesh uncharacteristic of the species in the presentation.
- (ii) Excessively tough or fibrous flesh uncharacteristic of the species in the presentation.

**8.4 Discolouration**

A sample unit affected by distinct discolouration indicative of decomposition or rancidity or by sulphide staining of more than 5% of the fish by weight in the sample unit.

**8.5 Objectionable Matter**

A sample unit affected by Struvite crystals - any struvite crystal greater than 5 mm in length.

**9. LOT ACCEPTANCE**

A lot will be considered as meeting the requirements of this standard when:

- (i) the total number of defectives as classified according to section 8 does not exceed the acceptance number (c) of the appropriate sampling plan with an AQL of 6.5;
- (ii) the total number of sample units not meeting the presentation defined in 2.3 does not exceed the acceptance number (c) of the appropriate sampling plan with an AQL of 6.5;
- (iii) the average net weight or the average drained weight where appropriate of all sample units examined is not less than the declared weight, and provided there is no unreasonable shortage in any individual container;
- (iv) the Food Additives, Hygiene and Labelling requirements of Sections 4, 5 and 6 are met.

### SENSORY AND PHYSICAL EXAMINATION

1. Complete external can examination for the presence of container integrity defects or can ends which may be distorted outwards.
2. Open can and complete weight determination according to defined procedures in Sections 7.3, 7.4 and 7.5.
3. Carefully remove product and examine for discolouration, foreign matter and struvite crystals. The presence of a hard bone is an indicator of underprocessing and will require an evaluation for sterility.
4. Assess odour, flavour and texture in accordance with the [Guidelines for the Sensory Evaluation of Fish and Shellfish in Laboratories \( CXG 31-1999\)](#).