

# 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  
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## STANDARD FOR LIVE ABALONE AND FOR RAW FRESH CHILLED OR FROZEN ABALONE FOR DIRECT CONSUMPTION OR FOR FURTHER PROCESSING

CODEX STAN 312-2013

Adopted in 2013. Amendment: 2016.

## SCOPE

This Standard applies to live abalone and/or raw fresh chilled or frozen abalone of the genus *Haliotis*. Raw fresh chilled or frozen abalone may be whole or shucked with the viscera removed. The epithelium, mucous and radula may be removed. Chilling or freezing is done in such a way that essentially the characteristics of live abalone are retained. Both live and raw fresh chilled or frozen abalone may be intended for direct consumption or further processing. Part I below applies to live abalone, while Part II applies to raw fresh chilled or frozen abalone.

### **PART I – LIVE ABALONE**

#### **I-2 DESCRIPTION**

##### **I-2.1 Product Definition**

Live abalone are products that are alive immediately prior to consumption. Presentation includes the shell.

##### **I-2.2 Process Definition**

Live abalone may be wild caught or farmed. They may be purged in clean sea water and/or drained prior to packaging for direct human consumption or for further processing as in II-2.2.

##### **I-2.3 Presentation**

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

- meets all requirements of this Standard; and
- is adequately described on the label to avoid confusing or misleading the consumer.

The abalone may be packed by weight, count, count per unit of weight or volume per package.

#### **I-3 ESSENTIAL COMPOSITION AND QUALITY FACTORS**

##### **I-3.1 Abalone**

The abalone must be alive and possess organoleptic characteristics associated with freshness, and freedom from taint or extraneous matter, as determined by specialists familiar with the species concerned.

##### **I-3.2 Final Product**

Live abalone shall meet the requirements of this Standard when lots comply with the provisions of Section I-10. Live abalone shall be examined by the methods given in Sections I-8 and I-9.

#### **I-4 FOOD ADDITIVES**

Food additives are not permitted in live abalone.

#### **I-5 CONTAMINANTS**

**I-5.1** The products covered by this Standard shall comply with the Maximum Levels of the [General Standard for Contaminants and Toxins in Foods and Feeds \(CODEX/STAN 193-1995\)](#) and the maximum residue limits for veterinary drugs established by the Codex Alimentarius Commission.

**I-5.2** Abalone from some geographical areas have been found to accumulate certain marine biotoxins. It is up to the Competent Authority (using a Risk Assessment) to determine whether a risk exists in any geographical areas under its control and if so, put in the necessary mechanisms to ensure that the part of the abalone to be consumed, meets with the marine biotoxins level in the [Standard for Live and Raw Bivalve Molluscs \(CODEX STAN 292-2008\)](#). The Risk Assessments should be undertaken in accordance with the [Working Principles for Risk Analysis for Food Safety for Application by Governments \(CAC/GL 62-2007\)](#).

#### **I-6 HYGIENE AND HANDLING**

**I-6.1** It is recommended that the products covered by provisions of this Standard be prepared and handled in accordance with the appropriate sections of the [General Principles of Food Hygiene \(CAC/RCP 1-1969\)](#), the [Code of Practice for Fish and Fishery Products \(CAC/RCP 52-2003\)](#) and other relevant Codex Codes of Hygienic Practice and Codes of Practice.

**I-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 \(CAC/GL 21-1997\)](#).

**I-6.3** The final product shall be free from any foreign material that poses a threat to human health.

## **I-7 LABELLING**

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

### **I-7.1 The Name of the Food**

**I-7.1.1** The name of the food to be declared on the label shall be the common or usual name of the species of abalone in accordance with the law and custom of the country in which the food is sold and in a manner not to mislead the consumer.

**I-7.1.2** There shall appear on the label, reference to the presentation (provided for in Section I-2.3- Presentation) in close proximity to the name of the product in such descriptive terms that will adequately and fully describe the nature of the presentation of the product to avoid misleading or confusing the consumer.

**I-7.1.3** In addition to the specified labelling designations above, the usual or common trade names of the variety may be added so long as it is not misleading to the consumer in the country in which the product will be distributed.

**I-7.1.4** The country where the product is sold can determine if the scientific name must be indicated on the label.

### **I-7.2 Content Declaration**

Live abalone shall be labelled by weight, count, volume per package or count per unit weight as appropriate to the product.

### **I-7.3 Storage Instructions**

The label shall specify the conditions for storage and/or temperature that will maintain the product quality/viability during transportation, storage and distribution.

### **I-7.4 Labelling of Non-Retail Containers**

Information specified above shall be given either on the container or in accompanying documents, except that the name of the food, lot identification, and the name and address of the manufacturer or packer as well as storage instructions shall always appear on the container.

However, lot identification, and the name and address may be replaced by an identification mark, provided that such a mark is clearly identifiable with the accompanying documents.

**I-7.5** The durability or shelf life may be required in the country where the product is sold. Date of minimum durability may be replaced by the statement "Abalone must be alive when sold to the final consumer."

## **I-8 SAMPLING, EXAMINATION AND ANALYSIS**

### **I-8.1 Sampling**

#### **I-8.1.1 Sensory and Physical Examination and Determination of Count per Unit Weight or Volume**

Attribute sampling plan, [General Guidelines on Sampling \(CAC/GL 50\)](#), Section 4.2, Table 10 using AQL 6.5%.

#### **I-8.1.2 Determination of Net Weight**

Sampling plans by variables with unknown standard deviation (s-method), [General Guidelines on Sampling \(CAC/GL 50\)](#) section 4.3, Table 14.

### **I-8.2 Sensory and Physical Examination**

Samples taken for sensory and physical examination shall be assessed by persons trained in such examination and in accordance with procedures elaborated in Sections I-8.3 through I-9, and [Guidelines for the Sensory Evaluation of Fish and Shellfish in Laboratories \(CAC/GL 31-1999\)](#).

### **I-8.3 Determination of Count per Unit Weight or Volume**

When declared on the label, the count of abalone shall be determined by counting the number of abalone in the container or a representative sample thereof and dividing the count of abalone by the actual weight/volume to determine the count per unit weight or volume.

### **I-8.4 Determination of Biotoxins**

Where a risk exists, the marine biotoxins of concern shall be determined according to the methods specified in the [Standard for Live and Raw Bivalve Molluscs \(CODEX STAN 292-2008\)](#).

**I-9 DEFINITION OF DEFECTIVES**

The sample unit shall be considered defective when it exhibits any of the properties defined below.

**I-9.1 Foreign Matter**

The presence in the sample unit of any matter which has not been derived from abalone, 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.

**I-9.2 Dead or Damaged Product**

A dead abalone is characterized by lack of muscle movement when touched and/or complete muscle stiffness due to the rigor mortis process setting in after death of the animal. A damaged abalone is flawed to the extent that its integrity is affected. The sample unit is defective if more than 5% of the abalones by count in the sample unit are dead or damaged.

**I-10 LOT ACCEPTANCE**

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

- (i) the total number of defectives as classified according to section I-9 does not exceed the acceptance number (c) of the appropriate sampling plan with an AQL of 6.5.
- (ii) the average count designation as defined in section I-8.3 is within the declared count, and the total number of samples not meeting the count designation does not exceed the acceptance number (c) of the appropriate sampling plan with an AQL of 6.5.
- (iii) the average net weight of all sample units is not less than the declared weight, provided there is no unreasonable shortage in any individual container;
- (iv) the essential composition and quality factors, food additives, contaminants, hygiene and handling and labelling requirements of Sections I-3, I-4, I-5, I-6 and I-7 are met.

**PART II – RAW FRESH CHILLED OR FROZEN ABALONE****II-2 DESCRIPTION****II-2.1 Product Definition**

Raw fresh chilled or frozen whole abalone prepared for direct consumption or for further processing are products that were alive immediately prior to the commencement of freezing and/or processing and comply with Section I-2.2. They have been chilled or frozen whole or shucked with the viscera removed. The epithelium, mucous or radula may be removed.

**II-2.2 Process Definition**

The product is harvested as in I-2.2 and after suitable preparation is subjected to a chilling or freezing process complying with the conditions laid down hereafter. The chilling process shall be carried out in appropriate equipment in such a way as to ensure the product shall be quickly brought down to the temperature of melting ice (with a maximum tolerance of -2°C to +4°C). The product shall be kept chilled at this temperature so as to maintain the quality during transportation, storage and distribution.

The freezing process shall be carried out in appropriate equipment in such a way that the range of maximum ice crystallization is passed quickly. The quick freezing process shall not be regarded as complete unless and until the product temperature has reached -18°C or colder at the thermal centre after thermal stabilization. The product shall be kept deep frozen at -18°C or colder so as to maintain the quality during transportation, storage and distribution.

**II-2.3 Presentation**

Refer to I-2.3.

**II-3 ESSENTIAL COMPOSITION AND QUALITY FACTORS****II-3.1 Raw Fresh Chilled or Frozen Abalone**

Raw abalone shall be of a quality fit for human consumption.

**II-3.2 Glazing (for Frozen Abalone only)**

If glazed, the water used for glazing or preparing glazing solutions shall be of potable quality or shall be clean sea-water. Potable water is fresh-water fit for human consumption. Standards of potability shall not be less than those contained in the latest edition of the WHO "International Guidelines for Drinking Water Quality." Clean sea-water is sea-water which meets the same microbiological standards as potable water and is free from objectionable substances.

### II-3.3 Other Ingredients

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

### II-3.4 Final Product

Raw fresh chilled or frozen abalone shall meet the requirements of this standard when lots examined in accordance with Sections II-8 and II-9 comply with the provisions set out in Section II-10.

## II-4 FOOD ADDITIVES

Food additives are not permitted in raw fresh chilled or frozen abalone.

## II-5 CONTAMINANTS

Refer to I-5 Contaminants

## II-6 HYGIENE

Abalone should meet the requirements of I-6 prior to chilling/freezing. After processing they should retain visual characteristics associated with freshness, including, where relevant, shells free of dirt.

## II-7 LABELLING

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

### II-7.1 The Name of the Food

The name of the food to be declared on the label shall be the common or usual name of the species of abalone in accordance with the law and custom of the country in which the food is sold and in a manner not to mislead the consumer.

**II-7.1.1** There shall appear on the label, reference to the presentation (provided for in Section II-2.3- Presentation) in close proximity to the name of the product in such descriptive terms that will adequately and fully describe the nature of the presentation of the product to avoid misleading or confusing the consumer.

**II-7.1.2** In addition to the specified labelling designations above, the usual or common trade names of the variety may be added so long as it is not misleading to the consumer in the country in which the product will be distributed.

**II-7.1.3** The country where the product is sold can determine if the scientific name must be indicated on the label.

### II-7.2 Content Declaration

Raw fresh chilled or frozen abalone shall be labelled by weight, count, count per unit weight, or volume as appropriate to the product.

Where the frozen food has been glazed, the declaration of the net weight of the food shall be exclusive of the glaze.

### II-7.3 Storage Instructions

The label shall specify the conditions for storage and/or temperature that will maintain the product safety/quality during transportation, storage and distribution including date of minimum durability and date of shucking where required in the country of sale.

### II-7.4 Labelling of Non-retail Containers

Information specified above shall be given either on the container or in accompanying documents, except that the name of the food, lot identification, and the name and address of the manufacturer or packer as well as storage instructions shall always appear on the container.

However, lot identification, and the name and address may be replaced by an identification mark, provided that such a mark is clearly identifiable with the accompanying documents.”

## II-8 SAMPLING, EXAMINATION AND ANALYSIS

### II-8.1 Sampling

Refer to I-8.1

### II-8.2 Sensory and Physical Examination

Samples taken for sensory and physical examination shall be assessed by persons trained in such examination and in accordance with procedures elaborated in Sections II-8.3 through II-8.5 and II-9, and [Guidelines for the Sensory Evaluation of Fish and Shellfish in Laboratories \(CAC/GL 31-1999\)](#).

## **II-8.3 Determination of Net Weight**

The net weight of all sample units shall be determined by the procedures described or mentioned in sections II-8.3.1 through II-8.3.3.

### **II-8.3.1 Determination of Net Weight of Product Exclusive of Packaging**

- (i) Remove frost and ice from outside of package;
- (ii) Weigh the unopened container;
- (iii) Open the container and remove the contents;
- (iv) Dry the empty container and weigh.
- (v) Subtract the weight of the empty container from the weight of the unopened container.

The resultant figure will be the total net weight.

### **II-8.3.2 Determination of Net Weight of Frozen Products not Covered by Glaze**

The net weight (exclusive of packaging material) of each sample unit representing a lot shall be determined in the frozen state.

### **II-8.3.3 Determination of Net Weight of Frozen Products Covered by Glaze**

The net weight (exclusive of packaging material) of each sample unit representing a lot shall be determined using the AOAC official method 963.18, Net Contents of Frozen Seafoods.

## **II-8.4. Determination of Count per Unit Weight or Volume**

When declared on the label, the count of abalone shall be determined by counting the numbers of abalone in the container or a representative sample thereof and dividing the count of abalone by the actual weight/volume to determine the count per unit weight or volume.

## **II-8.5. Sample Preparation**

### **II-8.5.1 Procedures for Thawing**

For frozen product, the sample is thawed by enclosing it in a film type bag allowing it to thaw at room temperature or in a refrigerator (at 2 - 6 °C). The complete thawing of the product is determined by gently squeezing the bag occasionally so as not to damage the texture of the abalone, until no hard core or ice crystals are left.

### **II-8.6 Determination of Biotoxins**

Where a risk exists, the marine biotoxins of concern shall be determined according to the methods specified in the [Standard for Live and Raw Bivalve Molluscs \(CODEX STAN 292-2008\)](#).

## **II-9 DEFINITION OF DEFECTIVES**

The sample unit shall be considered as defective when it exhibits any of the properties defined below.

### **II-9.1 Deep Dehydration**

An area of greater than 10% of the surface of the abalones in the sample unit exhibits excessive loss of moisture clearly shown as white or abnormal colour on the surface which masks the colour of the flesh and penetrates below the surface, and cannot be easily removed by scraping with a knife or other sharp instrument without unduly affecting the appearance of the abalone, which affects more than 10% of the weight of the abalones in the sample unit.

### **II-9.2 Foreign Matter**

The presence in the sample of any matter which has not been derived from abalone, 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.

### **II-9.3 Odour/Flavour**

Persistent and distinct objectionable odours or flavours indicative of decomposition, rancidity, or other odours or flavours unfit for food."

### **II-9.4 Texture**

Textural breakdown of the flesh, indicative of decomposition, characterized by a muscle structure that is mushy or paste-like.

**II-10 LOT ACCEPTANCE**

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

- (i) the total number of defectives as classified according to section II-9 does not exceed the acceptance number (c) of the appropriate sampling plan with an AQL of 6.5.
- (ii) the average count designation as defined in section II-8.3 is within the declared count, and the total number of samples not meeting the count designation does not exceed the acceptance number (c) of the appropriate sampling plan with an AQL of 6.5.
- (iii) the average net weight of all sample units is not less than the declared weight, provided there is no unreasonable shortage in any individual container;
- (iv) the essential composition and quality factors food additives, contaminants, hygiene and handling and labelling requirements of Sections II-3, II-4, II-5, II-6 and II-7 are met.