



JOINT FAO/WHO FOOD STANDARDS PROGRAMME CODEX COMMITTEE ON FISH AND FISHERY PRODUCTS

Thirty-fourth Session

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Report of the Physical Working Group on the

Revised Draft Code of Practice on the Processing of Fresh and Quick Frozen Raw Scallop Products

Summary

1. The Physical Working Group (PWG) met on Sunday, October 18th 2015 to continue the work of the electronic working group (led by Canada, refer to CX/FFP 15/34/5) and further develop the Draft Code of Practice on the Processing of Fresh and Quick Frozen Raw Scallop Products (the Code). The meeting was well attended by 20 member countries and the European Union¹.
2. The group focussed on five general areas of the Code, using FFP/34 CRD/2 as the working document. The outcome of the discussion is summarised below.
 - a) Section X.1.1.1 Marine Biotoxins: The discussion largely centred on the importance of hazard analysis for informing the type(s) of control measures needed to ensure scallop products are safe for human consumption. It was agreed that the wording for this section should closely align with section 5 of CODEX STAN 315-2014 and not be repetitive. Three statements held in square brackets were deleted. There was overall agreement to this section, as revised in Appendix I.
 - b) Section X.2.1.1 Scallop Landing/Deck Dump: It was agreed that the technical guidance in this section could be streamlined given that comparable guidance could be found in section 7.3. It was recognised that guidance for scallop harvest and vessel transport is the same as for other bivalves at this initial processing step. There was overall agreement to this section, as revised in Appendix I.
 - c) Section X.2.1.1 Washing Live Scallops/Size Grading: This section was also streamlined. Bullets #2 and #3 were deleted for reasons explained by the United States in CX/FFP 15/34/5 Add.1 (page 8). The last bullet was revised as the reference to jurisdictional size limit requirements was considered outside the scope of the Code. There was overall agreement to this section, as revised in Appendix I.
 - d) Use of the terms “live scallops” and “whole scallops”: It was unanimously agreed that scallops should be alive during processing step 1 (landing) and step 2 (washing, size grading). This was already reinforced in section X.2.1.1 (i.e. the bullet reading “*Scallops showing evident signs of*

*death...”). A revision was necessary for section heading X.2.1.2 to use the term “live” (vs whole). Furthermore, it was recalled that the *Standard for Live and Raw Bivalve Molluscs* (CODEX STAN 292-2008, section 2.2.1) and the *Standard for Fresh and Quick Frozen Raw Scallop Products* (CODEX STAN 315-2014 section 2.1.1) already establish the practice of using bivalves that are alive prior to preparation/processing. For this reason, it was agreed to discontinue the debate on these terms and remove the qualifiers “live” or “whole” from the remaining guidance (i.e. for processing step 18 (X.2.2.1), step 19 (X.2.2.2) and step 20 (X.2.3.2).*

- e) Figure X.1, Example Flowchart: Several participants engaged in a discussion on the merits of including either one flowchart or two flowcharts to cover the current sections of the draft Code. While there were reasonable rationales for both approaches, it was finally agreed that one flowchart would be adequate – recognizing that the flowchart is for illustrative purposes only. It was also recognised that section references need to be added to the flowchart boxes (for ease of reference, and in alignment with all other flowcharts in the Code of Practice for Fish and Fishery Products). There was general agreement to the flowchart in Appendix I.

Recommendation:

- The committee is invited to consider this report and the amended draft Code found in Appendix I

1: Participants of the physical working group: Argentina, Australia, Canada, Estonia, EU, FAO, France, Germany, India, Iran, Italy, Luxembourg, Malaysia, New Zealand, Norway, Papua New Guinea, Poland, Spain, United Kingdom, United States, IAFI (Observer), Joint FAO/WHO Secretariat.

Appendix 1

SECTION 2 DEFINITIONS

For the purposes of this Code:

Roe-on Scallop Meat As defined in the *Standard for Fresh and Quick Frozen Raw Scallop Products* ([CODEX STAN 315-2014](#))

Scallop Meat As defined in the *Standard for Fresh and Quick Frozen Raw Scallop Products* ([CODEX STAN 315-2014](#))

Quick Frozen Scallop Meat or Quick Frozen Roe-on Scallop Meat with Added Water and/or a Solution of Water and Phosphate As defined in the *Standard for Fresh and Quick Frozen Raw Scallop Products*

Scallop Products Refers to all the scallop products identified above.

Shucking Is the process of removing the Scallop Meat or Roe-on Scallop Meat from the **[live][whole]** scallops.

Roe Is the scallop gonad(s) containing the ovary and/or testis.

Viscera Is comprised of all the internal organs excluding the roe.

(The table of contents and 3 preamble paragraphs on pages 3-4 of CX/FFP 15/34/5 have been deleted – for consistency with other sections of the Code of Practice for Fish and Fishery Products.)

SECTION X PROCESSING OF FRESH AND QUICK FROZEN RAW SCALLOP PRODUCTS

In the context of recognizing controls at individual processing steps, this section provides examples of potential hazards and defects and describes technological guidelines, which can be used to develop control measures and corrective actions. At a particular step, only the hazards and defects which are likely to be introduced or controlled at that step are listed. It should be recognized that in preparing a Hazard Analysis and Critical Control Point (HACCP) and/or Defect Action Point (DAP) plan it is essential to consult Section 5 of the *Code of Practice for Fish and Fisheries Products* which provides guidance for the application of the principles of the HACCP and DAP analysis. However, within the scope of this Code of Practice it is not possible to give details of critical limits, monitoring, record keeping and verification for each of the steps since these are specific to particular hazards and defects and to the control measures used.

This section applies to scallop products defined in the *Standard for Fresh and Quick Frozen Raw Scallop Products* ([CODEX STAN 315-2014](#)), including Fresh or Quick Frozen Scallop Meat; Fresh or Quick Frozen Roe-on Scallop Meat; and Quick Frozen Scallop Meat [or Quick Frozen Roe-on Scallop Meat](#) with Added Water and/or Solutions of Water and Phosphates; and covers harvesting through land-based processing operations.

Refer to Section 3 – ~~Pre-requisite programme~~ which outlines the minimum requirements for good hygienic practices for a harvesting vessel and processing establishment prior to the application of hazard and defect analysis.

X.1 IDENTIFICATION OF HAZARDS AND DEFECTS

This section describes the main hazards and defects that may be associated with scallop products.

Refer also to Section 5.3.3 [Conduct Hazard and Defect Analysis of the Code of Practice for Fish and Fisheries Products](#).

X.1.1 Hazards

Refer also to Section 5.3.3.1 ~~Identification of Hazards and Defects~~. When marketing scallop products, all products should meet the relevant contaminant and hygienic provisions outlined in the *Standard for Fresh and Quick Frozen Raw Scallop Products* ([CODEX STAN 315-2014](#)). Where marketing of roe-on scallop meat is concerned, this product should meet the contaminants and relevant hygienic provisions outlined in the *Standard for Live and Raw Bivalve Molluscs* (CODEX STAN 292-2008) and the *Standard for Fresh and Quick Frozen Raw Scallop Products* ([CODEX STAN 315-2014](#)).

X.1.1.1 Marine Biotoxins

Scientific data has shown that when algal blooms producing marine biotoxins¹ are present in harvest areas, toxins may accumulate at a hazardous level in the viscera and roe. Therefore, for roe-on scallop meat products, preventive measures should be in place in accordance with the *Standard for Live and Raw Bivalve Molluscs* (CODEX STAN 292-2008).

With respect to scallop meat products, marine biotoxins are not reasonably likely to present a hazard. While the hazard analysis will consider marine biotoxins a potential hazard, this hazard will be excluded or included based upon the species and the available country specific scientific evidence for toxins in that species. During shucking to produce scallop meat, incomplete removal of the viscera and roe may introduce biotoxin health hazards. If marine biotoxins are an identified hazard in the meat of the species then biotoxin control measures should be in place.

~~[Marine biotoxins are not reasonably likely to present a hazard in in properly processed commercial scallop adductor muscle meat shucked live.]~~

~~[Biotoxins may migrate into the adductor muscle (meat) if the viscera and roe are not removed while the scallop is alive.]~~

~~[Toxins may accumulate at a hazardous level in the adductor muscle (in some species)]~~

~~[If a hazard analysis based on f there is~~ information from monitoring of the harvesting area or from ~~on-board~~ biotoxin screening **indicates** that toxins are present in the viscera/whole body analysis, control measures should be in place to confirm that scallop products are safe for human consumption (i.e. further testing of meat or roe-on scallops).]

X.1.2 Defects

X.1.2.1 Objectionable and Foreign Matter

Sand, silt, detritus and foreign matter may accompany harvested scallops from the natural environment to shipboard. If not properly rinsed away, sand and silt may become embedded between the fibers of the adductor muscle, commonly associated with muscle contraction at time of death. Excessive amounts of foreign matter could result in undesirable physical attributes in the final product that would be objectionable to consumers and potentially hazardous, such as the grinding of teeth on sand and silt while chewing.

X.1.2.2 Excess Water Uptake

It has been shown that freshwater in contact with scallop adductor muscle meat will increase its moisture content over time. Scallop adductor muscle can uptake and retain added water through several physical and chemical mechanisms exhibiting various degrees of water binding strength. The scallop adductor muscle meat should not be in contact with fresh water, including melting fresh water ice, for a period of time greater than that required for preparation and processing otherwise the product will absorb excess water, which may be construed as an unfair trade practice or consumer fraud. Proper controls should be in place by the producer and processor in order to avoid water uptake or limit any water uptake to that which is technologically unavoidable.

In the case of quick frozen scallop meat or quick frozen roe-on scallop meat products processed with a solution of water and phosphate, or added water alone, proper processing controls should be in place to ensure that the amount of water added is consistent with the percentage of water indicated on the label (to avoid unfair trade practice or consumer fraud).

The use of a solution of water and phosphate, or added water alone, is only permitted in quick frozen scallop products.

X.2 PROCESSING OPERATIONS

The commercial harvest practices of scallops are variable. Shucking can occur on board ~~of~~ scallop vessels equipped for such operations or in land-based processing facilities. Scallop fishing may be either short (typically 1-2 days) or long (typically 3-15 days).

When scallops are shucked in land-based facilities the harvest vessel voyages are always short in order to maintain the scallops in good condition until shucking. Using this practice, scallops are landed on board harvest vessels, and chilled and stored under temperature control.

¹ Marine biotoxins: e.g. paralytic shellfish poisoning toxin (PSP); amnesic shellfish poisoning toxin (ASP); ~~and~~ diarrhetic shellfish poisoning toxin (DSP)

When scallops are shucked on board harvest vessels, the voyages can be short or long. Using this practice, the scallops are landed on board harvest vessels, shucked, washed, pre-chilled, drained and bagged, then stored in iced, or refrigerated, or frozen storage until the scallop vessel has landed on shore.

Figure X.1 Example of a flow chart for production of scallop products

This flow chart is for illustrative purposes only. For in-factory HACCP implementation a complete and comprehensive flow chart has to be drawn up for each process.

(To view updated flowchart, refer to last of this CRD)

X.2.1 Vessel Operations (shucking on vessel)

This section is designed to cover the handling and processing of fresh Scallop Meat and Roe-on Scallop Meat on harvest vessels where the scallops are shucked on-board the vessel. ~~The common steps for harvest vessel operations and subsequent land-based processing for scallops shucked on the vessel are shown by the left branch of the example flow diagram (Figure X.1).~~

X.2.1.1 Scallop Landing/Deck Dump (Processing Step 1)

Potential Hazards: Microbiological contamination; biotoxins, and chemical contamination

Potential Defects: Physical damage, dead scallops

Technical Guidance

- Refer to Section 7.3 ~~Harvesting and transportation of live bivalve molluscs of the Code of Practice for Fish and Fisheries Products.~~
- ~~For shucking on vessel at sea shucking voyages, [live] scallops should be collected and placed in clean storage containers made from material that is easy to wash and disinfect and that is suitable for contact with seawater, without undue delay and with care to avoid contamination.~~
- ~~For shucking on land short haul voyages [live] scallops should be collected and placed on deck or clean work surface to allow for washing of scallops. This should be carried out without undue delay and with care to avoid contamination.~~
 - ~~—To reduce stress and increase longevity, provide shade, seawater spray, or quickly transfer to a chilled environment to minimize the time scallops are exposed to elevated temperatures and dry conditions.~~
 - ~~—Clean seawater should must be used and surfaces should be clean and impervious.~~
- Scallops showing evident signs of death or damage should be disposed of in a proper manner. ~~Dead/Unfit~~ scallops can be identified through sensory evaluation, covering characteristics such as shell gaping, lack of response to percussion, sour odour, and/or viscera exposed outside the shell, picking of muscle or mantle, evident signs of decomposition, or other effective methods to assess viability.
 - Rough handling of live scallops should be avoided to minimize stress and injury ~~that which~~ could lead to the death of scallops prior to processing.
 - ~~—Waste material should be disposed of in an appropriate manner.~~

X.2.1.2 Washing Live Whole Scallops / Size Grading (Processing Step 2)

Potential hazards: Microbiological contamination; chemical and physical contamination

Potential defects: Foreign matter, physical damage

Technical Guidance:

- Refer to Sections 7.3 ~~Harvesting and transportation of live bivalve molluscs~~ and 7.6.3 ~~Washing, declumping, debyssing and grading of the Code of Practice for Fish and Fisheries Products.~~
- ~~The surface of the shells should be washed free of mud, detritus and sand.~~
- ~~Scallops having formed clumps should be de-clumped.~~

- Washing should be carried out using pressurized clean sea water or salt water made from potable water. If salt water other than sea water is used it should be prepared from potable water and of 3% of food grade salt to minimize the uptake of moisture. The salinity of the salt water should be monitored.
- ~~Scallops should be sorted and graded at this point. ~~(graded) if legal minimum or marketing sizes apply.~~~~

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X.2.1.3 Shucking (Processing Steps 3, 21)

Potential Hazards: Physical contamination, marine biotoxins in viscera and roe; microbiological contamination

Potential Defects: Remaining viscera; remaining roe (in the case of Scallop Meat); dead or damaged scallops, foreign matter, cuts and tears in the flesh

Technical Guidance:

- Refer to Section 7.8.1 ~~Shucking Hand and mechanical shucking of the Code of Practice for Fish and Fisheries Products.~~
- Scallops should be shucked as soon as possible after harvest.
- For ~~shucking on vessel or land at sea shucking voyages~~, dead scallops observed during shucking should be disposed of in a proper manner because the time of death is unknown and the quality of the meat and roe may be unacceptable. Dead scallops can be identified through sensory evaluation, covering characteristics such as shell gaping, lack of response to percussion, sour odor, and/or viscera exposed outside the shell, picking of muscle or mantle, or other effective methods to assess viability.
- For Scallop Meat, care should be taken to ensure that the viscera and roe are completely removed in order to reduce the risk of contamination with biotoxins and pathogens associated with the viscera.
- For Roe-on Scallop Meat, care should be taken to ensure that the viscera is completely removed.
- Care should be taken to insure that worker's hands, shucking tables, containers, and knives are properly cleaned and sanitized.
- Workers should be trained so as to avoid damage to scallops.
- The shucked scallops should proceed immediately to the washing step next steps to minimize their exposure to ambient temperatures above 4°C.

X.2.1.4 Washing shucked scallops (Processing Steps 4, 22)

Potential Hazards: Shell fragments/foreign matter, marine biotoxins

Potential Defects: Objectionable matter; foreign matter; excess water uptake

Technical Guidance:

- Immediately after shucking, ~~c~~ Clean sea water or salt water made from potable water should be used to wash scallops after shucking to remove ~~any objectionable matter such as~~ remains of viscera, shell fragments, sand, and foreign matter such as debris.
- During washing, scallops should be gently agitated and separated from each other in order to allow the removal of viscera remains, ~~sand~~, shell fragments and other foreign matter such as sand.
- If salt water other than sea water is used it should be prepared from potable water and 3% of food grade salt to minimize the uptake of moisture. The salinity of the salt water should be monitored.
- If potable fresh water is used, the washing/showering method should be clearly defined and the contact time between the water and scallops should be monitored and limited to minimize water uptake to that which is technologically unavoidable.
- Washed scallops should be adequately drained.
- After washing, the shucked scallops should be immediately pre-chilled, packed and refrigerated or iced and kept at the adequate temperature (between 0°C and 4°C).

X.2.1.5 Pre-chilling (Processing Step 5)

Potential Hazards: Microbiological contamination

Potential Defects: Excess water uptake (applies to pre-chilling using freshwater); decomposition

Technical Guidance:

- Pre-chilling of the scallops should be employed directly after shucking and washing to reduce the core temperature prior to being placed in vessel chilled storage. This step can minimize the amount of ice melt and consequently freshwater contact with the scallops during chilled storage. Rapid chilling will also minimize subsequent drip loss.
- Pre-chilling should include the immersion of the scallops in refrigerated seawater (clean seawater cooled by a suitable refrigeration system in fixed tanks chilled by mechanical refrigeration) or in iced sea water.
- If freshwater ice is used in conjunction with clean sea water, the contact time for each batch should be kept as short as practical to limit any excessive uptake of water beyond that which is technologically unavoidable.
- Water used for pre-chilling should be periodically replaced to minimize the bacterial load, maintain salinity, and ensure functional water temperature (i.e. $\leq 0\text{ }^{\circ}\text{C}$ ~~or $\leq 32\text{ }^{\circ}\text{F}$~~).

X.2.1.6 Packing (Processing Step 6)

Potential Hazards: Microbiological contamination, chemical and physical contamination

Potential Defects: Damaged scallops, foreign matter/filth, excess water uptake

Technical Guidance:

- Also refer to Section 8.5.1 ~~Reception — Packaging, Labels & Ingredients; Section 8.5.2 Storage — Packaging, Labels & Ingredients and Section 8.4.4 Wrapping and Packing of the Code of Practice for Fish and Fisheries Products.~~
- Shucked scallops should be stored in clean containers made of a suitable material appropriate to be in contact with food, a tag or other appropriate identification should be attached to each container to determine the date of harvest, harvest area, and other relevant product information. The authority could require the addition of precaution legends about the risks of consumption of raw and inadequate cooked food.
- ~~Storage c~~Containers/bags should not be too large, should be appropriately filled and not over-stacked in order to facilitate cooling and to prevent scallops from being damaged.
- If packed manually, worker's hands should be properly cleaned and sanitized.
- The scallops should be kept in a clean condition.

X.2.1.7 Chilled Storage (Processing Step 7)

Potential Hazards: Microbiological contamination

Potential Defects: Decomposition; excess water uptake; physical damage

Technical Guidance:

- Refer to Section 8.1.2 ~~Chilled Storage of the Code of Practice for Fish and Fisheries Products.~~
- Where ice is used, containers/bags of scallops should be surrounded by sufficient finely divided ice and stored scallops should be examined regularly to ensure sufficient ice cover of the product.
- Where ice is used, measures should be taken that avoid or limit water uptake to that which is technologically unavoidable (e.g. shorter ~~voyages trips~~, rapid and complete precooling, effective holding area insulation, impermeable containers, impervious film between ice and the container).
- The chilled storage compartment and/or storage containers should be adequately drained so that freshwater from the melted ice does not stay in contact with the product.
- Temperatures should be monitored to ensure that the stored scallops remain at a temperature between 0°C and 4°C .
- Containers should be appropriately stacked to facilitate cooling ~~and~~ and prevent scallop damage.
- Storage containers should be identified by harvest date and other relevant product information. Stock rotation schemes should be used to ensure proper utilization of the scallops at the land-based processing facility.
- The duration of ~~shucking on vessel at sea shucking~~ voyages should be limited to the number of days that will assure that at the time of off-loading at shore, the remaining shelf life for all the scallops harvested is adequate.

- Prior to offloading, product and storage information (e.g., dates of harvest in relation to onboard chilled storage locations) should be considered to facilitate proper utilization of the scallops.

X.2.2 Vessel Operations (shucking on land)

This section covers the handling and storage of ~~[live]~~ ~~[whole]~~ live scallops on board ~~short haul~~ harvesting vessels where shucking is done in the land based processing facility. The common steps for ~~harvest~~ vessel operations and subsequent land based processing for scallops shucked on land are shown in the right branch of the example flow diagram (Figure X.1).

X.2.2.1 On Board Storage (Deck/hold) of **Whole** Scallops (Processing Step 18)

Potential hazards: Microbiological contamination; chemical and physical contamination

Potential defects: Decomposition; physical damage; stress through thermal shock

Technical Guidance:

- Refer to Section ~~7.3 Harvesting and transportation and section 8.1.2 Chilled Storage of live bivalve molluscs of the Code of Practice for Fish and Fisheries Products.~~
- ~~Scallops should be protected against sun exposure, contact with foreign matter, be stacked in a proper manner in order to keep them alive, maintain integrity and avoid damage and contamination.~~
- ~~Scallops should be placed in clean net sacks or other suitable containers.~~
- ~~Containers should must provide for adequate drainage.~~
- ~~Areas where scallops are stored should must be clean and cleanable.~~
- ~~Scallops should not be stored on surfaces such that they can become re-immersed and/or subject to contamination.~~
- ~~Temperature control is recommended for storage to ensure scallops are stored between 0°C and 4°C. This can involve both fishroom chilling and/or the use of ice. However care must be taken as in warm seawater conditions a sudden reduction in temperature can induce stress through thermal shock.~~
- ~~Ice should must be made from clean water or clean seawater.~~
- ~~Care should must be taken when icing scallops to minimize exposure to freshwater meltwater as it can cause stress.~~
- Scallops stored on deck for short periods of time ~~should can~~ be ~~covered to protect them from direct sunlight and can be~~ hosed down periodically using clean seawater to help lower temperatures in warm ambient conditions.
- ~~[Where ice is used, measures should be taken that avoid or limit water uptake to that which is technologically unavoidable (e.g. rapid and complete precooling, effective holding area insulation, impermeable containers, impervious film between ice and the container).~~
- ~~Appropriate documentation should be maintained to meet with any harvesting and transporting regulatory requirements that apply.~~

X.2.2.2 Landing of **Whole** Scallops to **Market/Processor** (Processing Step 19)

Potential hazards: Microbiological contamination; chemical and physical contamination

Potential defects: Physical damage; water uptake

Technical Guidance:

- Refer to Section ~~7.3 Processing of Live and Raw Bivalves of the Code of Practice for Fish and Fisheries Products~~ as well as closely related guidance in Step 8 ~~(X.2.3.1).~~
- During landing scallops should be unloaded without undue delay and not be subject to excessive physical shock through rough handling.
- ~~During storage at the place of landing and subsequent transport, temperature should be maintained between 0°C and 4°C. Where processing facilities are near to the landing area this may not be necessary.~~
- Transportation units should be clean, free of contamination and temperature controlled where necessary.
- Appropriate documentation should be completed to comply with any regulatory requirements.

X.2.3 Processing Facility Operations

This section covers the land-based processing of scallop products [which may occur on land or on vessel](#) as delineated in the example flow diagram (Figure X.1).

X.2.3.1 Reception (shucked scallops) (Processing Step 8)

Potential Hazards: Marine biotoxins, microbiological, chemical and physical contamination

Potential Defects: Decomposition; excess water uptake; parasites; objectionable matter; foreign matter

Technical Guidance:

- Product specifications [commonly used](#) include the following provisions:
 - [Sensory organoleptic](#) characteristics such as appearance, flavour, odour, texture, etc.;
 - Species identification;
 - Acceptable upper limit moisture content;
 - Workmanship (e.g., presence of viscera/roe);
 - Chemical contamination such as heavy metals, pesticide residues, etc.;
 - Presence of foreign matter;
 - Visible parasites.
- ~~For receiving of roe on scallop meat, A~~ processor should have a process in place to ensure that the toxicity content meets the regulatory requirements of the official agency having jurisdiction over the harvest area. This could be accomplished by adhering to a toxin monitoring programs or end product testing. As per X.1.1.1 this consideration would also apply to scallop meat where the hazard analysis has determined that marine biotoxins are a hazard in the scallop meat. Refer to Section 7.2 [Classification and monitoring of growing areas of the Code of Practice for Fish and Fisheries Products](#) for further information on the classification and monitoring of growing areas.
- Scallop handlers and appropriate personnel should acquire skills in sensory and physical examination techniques to ensure incoming lots meet essential quality provisions of the *Standard for Raw, Fresh and Quick Frozen Raw Scallop Products* ([CODEX STAN 315-2014](#)). ~~(under development)~~.
- Appropriate procedures should be in place for scallop handlers and appropriate personnel to verify that specifications are met. This could include, but is not limited to, inspecting the product and reviewing product information in commercial documentation.

X.2.3.2 Reception (~~whole scallops~~) (Processing step 20)

Potential Hazards: Marine biotoxins, microbiological, chemical and physical contamination

Potential Defects: Dead or damaged scallops; parasites; objectionable matter; foreign matter

Technical Guidance:

- Refer to Section 7.6.1 [Reception of the Code of Practice for Fish and Fisheries Products](#).
- ~~Whole s~~Scallops should be unloaded without undue delay and with care and adequately chilled to avoid microbiological contamination and decomposition.
- ~~Whole s~~Scallops should be examined at reception to assure they are in good condition and suitable for processing. Unfit scallops can be identified through sensory evaluation, covering characteristics such as shell gaping, lack of response to percussion, sour odour, and/or viscera exposed outside the shell, evident signs of decomposition, or other effective methods to assess suitability for shucking.
- Rough handling of scallops should be avoided to minimize stress and damage to the animal prior to processing.
- Product specifications [commonly used](#) include the following [provision characteristics](#):
 - Evident signs of death;
 - Broken shells;
 - Species identification;

- Chemical contamination such as heavy metals, pesticide residues, etc.;
- Presence of foreign matter;
- Visible parasites.
- Refer to Section 7.2 ~~Classification and monitoring of growing areas of the Code of Practice for Fish and Fisheries Products~~ for further information on the classification and monitoring of growing areas.
- Scallop handlers and appropriate personnel should acquire skills in physical examination techniques and GoodBest Hygiene Practice.
- Appropriate procedures should be in place for scallop handlers and appropriate personnel to verify that specifications are met. This could include, but is not limited to, inspecting the product and reviewing product information in commercial documentation.

X.2.3.3 Chilled Storage (Processing Steps 9, 23)

Potential Hazards: Microbiological contamination, chemical and physical contamination

Potential Defects: Decomposition, physical damage

Technical Guidance:

- Refer to Sections 7.6.5.2 ~~Storage of raw bivalve molluscs~~ and 8.1.2 ~~Chilled Storage of the Code of Practice for Fish and Fisheries Products~~.
- Stock rotation schemes should be used to ensure proper utilization of the scallop products. For scallops packed in containers, their identification tag facilitates the determination of the harvest date.
- Scallop pProducts should be stored between 0°C and 4°C. The temperature should be monitored during chilled storage.
- Product should be stacked in a manner that ~~would facilitate~~ adequate and uniform temperature distribution to all parts of the stored product.
- If freshwater ice is used to chill scallops, care should be taken to provide adequate drainage and minimize water uptake (See section X.1.2.7 ~~Chilled Storage~~). Any measurable absorbed water from ice should be properly measured and labeled.

X.2.3.4 Addition of a Solution of Water and Phosphate (Optional) (Processing Step 10)

Potential Hazards: Microbiological contamination, chemical contamination, use of unapproved or non-food grade additives

Potential Defects: Incorrect application of formulation of phosphate solution, Excess water uptake; off-flavours and textures, decomposition; inaccurate measurement and labelling of percent added phosphate solution

Technical Guidance:

- Food grade phosphates should be used in compliance with the requirements of the *Standard for Raw, Fresh and Quick Frozen Raw Scallop Products* (CODEX STAN 314-2014) ~~(under development)~~.
- Addition of phosphate solutions (phosphates and water) is an optional step, and results in a different product requiring different descriptive labelling.
- The quantity of phosphate solution added to scallops (for the production of quick frozen products only) should be limited to the lowest possible level necessary to accomplish the technological purpose (e.g., moisture retention, preservative). Phosphate solutions should not be used for the purpose of adding water to increase net weight however its use will result in the binding of additional water from the phosphate solution into the Scallop Meat. A processor should develop and follow a process for the application of phosphate solutions in order to consistently achieve the functional goals.
- The net weight of the in-process scallop batch should be recorded prior to and following the phosphate treatment in order to be able to calculate the percent added solution for labeling purposes.
- Refer to Section 8.5.1 ~~Reception – Packaging, Labels & Ingredients~~ and Section 8.5.2 ~~Storage – Packaging, Labels & Ingredients of the Code of Practice for Fish and Fisheries Products~~ for guidance on the reception and storage of ingredients.

X.2.3.5 Addition of Water (Optional) (Processing Step 10)

Potential Hazards: Microbiological contamination, chemical contamination

Potential Defects: Inaccurate measurement and labelling of percentage added water

Technical Guidance:

- The quantity of water added to scallops as an ingredient (for the production of quick frozen products only) should be limited to the lowest possible level.
- The weight of added water and scallops should be controlled and accurate in order to calculate the percentage added water for labelling purposes.

X.2.3.6 Size Grading and Examination (Processing Step 11)

Potential Hazards: Microbiological contamination

Potential Defects: Decomposition, improper size variation, parasites, physical contamination (filth)

Technical Guidance:

- Size grading of scallops is typically undertaken through mechanical graders of various degrees of sophistication. There is a possibility of scallops becoming trapped in the bars of the graders so that regular inspection and cleaning is required to prevent “carry-over” of old scallops.
- Gray or black adductor meat, which indicates that the scallop was dead at the time of shucking and is likely decomposed and may present a consumer health hazard, should be removed-culled from the lot.
- Scallops with an objectionable level of parasites should be culled from the lot.
- Containers of graded and examined scallops should be kept cool to ensure that the internal temperature is kept between 0°C and 4°C.
- Exposure to ambient temperatures above 4°C should be minimal and monitored.

X.2.3.7 Freezing Process (Processing Step 12)

Potential Hazards: Unlikely

Potential Defects: Texture deterioration, freezer burn

Technical Guidance

Refer to Section 8.3.1 ~~Freezing Process of the Code of Practice for Fish and Fisheries Products.~~

X.2.3.8 Glazing (Processing Step 13)

Potential Hazards: Unlikely

Potential Defects: Dehydration

Technical Guidance

- Refer to Section 8.3.2 ~~Glazing of the Code of Practice for Fish and Fisheries Products.~~
- When scallops are individually quick frozen (IQF), glaze is usually applied.
- Care should be taken to ensure that the entire surface of the frozen Scallop Meat or Roe-on Scallop Meat is covered with a suitable protective coating of ice and should be free of exposed areas where dehydration (freezer burn) can occur during frozen storage.

X.2.3.9 Weighing (Processing Step 14)

Potential Hazards: Unlikely

Potential Defects: Incorrect net weight

- Refer to Sections 8.2.1 ~~Weighing~~ and 8.3.2 ~~Glazing of the Code of Practice for Fish and Fisheries Products.~~
- Net weight is often determined by weighing glazed scallops and accounting for the weight of the glaze. For that reason, glaze levels should be routinely measured to ensure that proper net weights are identified.
- Scales should be properly adjusted to account for the estimated glaze percentage and re-adjusted when glaze percentage change.

X.2.3.10 Packaging (Processing Step 15)

Potential Hazards: Microbiological, chemical and physical contamination

Potential Defects: Misdescription, loss of quality characteristics of packaging materials

- Refer to ~~Section 7.6.4.2 Packaging and labelling of raw bivalve molluscs, 8.5.1 Reception Packaging, Labels & Ingredients and Section 8.5.2 Storage Packaging, Labels & Ingredients and Section 8.4.4 Wrapping and Packing of the Code of Practice for Fish and Fisheries Products.~~
- For fresh scallops and scallops intended to be block frozen, scallops should be adequately drained before packing into cartons.

X.2.3.11 Labelling (Processing Step 16)

Potential Hazards: Unlikely

Potential Defects: Incorrect labelling; inaccurately declared added phosphate solution or added water

Technical Guidance:

- Refer to Section 8.2.3 ~~Labelling of the Code of Practice for Fish and Fisheries Products.~~
- Information declared on the label should comply with the provisions of the *Standard for Raw, Fresh and Quick Frozen Raw Scallop Products (CODEX STAN 314-2014) (under development).*
- Labelling ~~should~~ **must** accurately describe the nature of the product so that consumers are not misled and can make an informed choice.
- When a solution of water and phosphate is used in the process or water is added as an ingredient, a system should be in place to ensure that they are properly and accurately declared on the label. Also refer to Section X.2.3.4 ~~Addition of a Solution of Water and Phosphate (Optional)~~ or Section X.2.3.5 ~~Addition of Water (Optional).~~

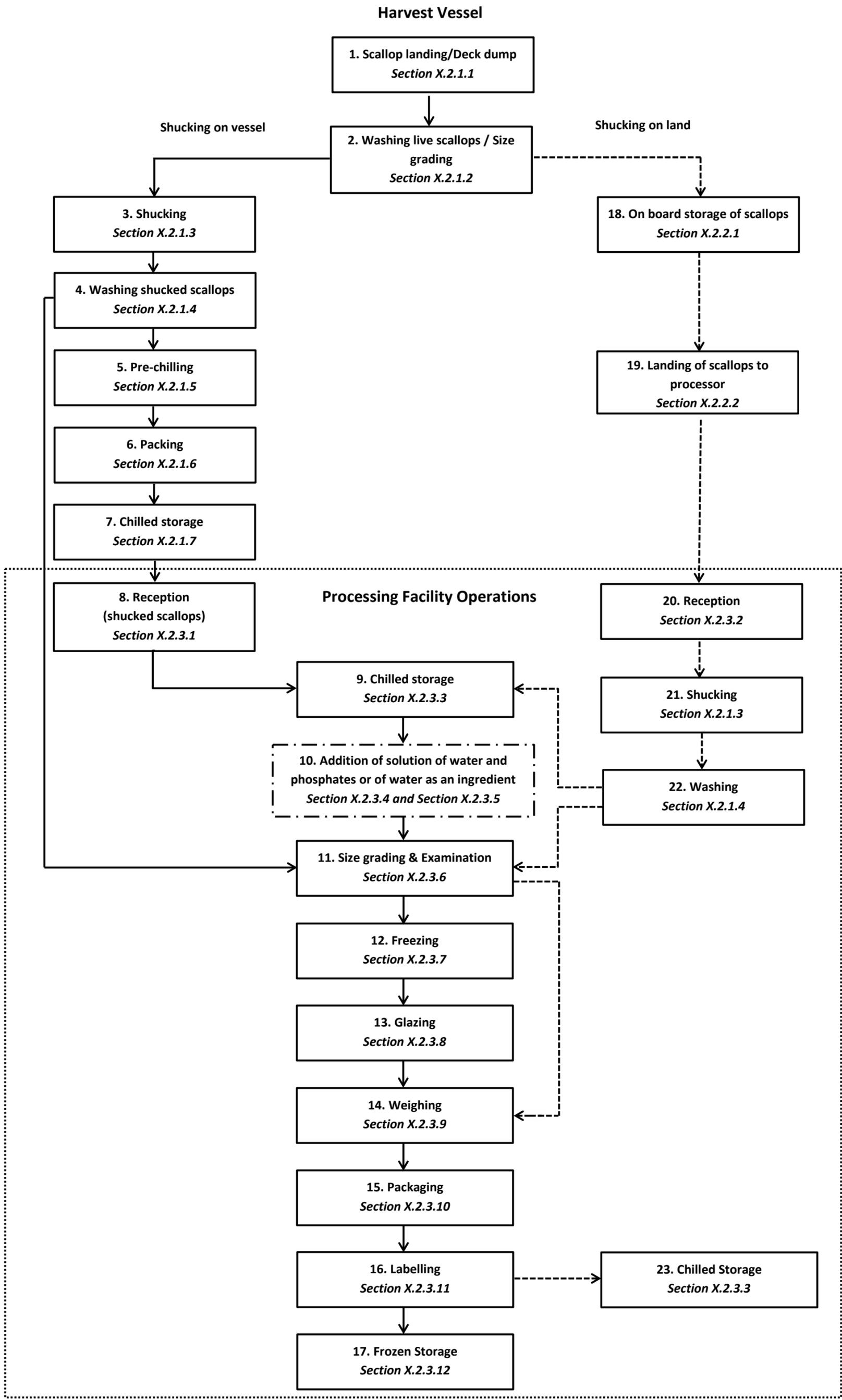
X.2.3.12 Frozen Storage (Processing Step 17)

Potential Hazards: Unlikely

Potential Defects: Dehydration; decomposition; development of rancid flavours and odours; loss of nutritional quality

Technical Guidance:

- Refer to Section 8.1.3 ~~Frozen Storage of the Code of Practice for Fish and Fisheries Products.~~
- The time to development of rancid flavours and odours for the packaging and frozen storage conditions should be determined to assure that frozen product is distributed with adequate remaining shelf life.



-----> Steps exclusive to shucking on land

----- Optional step