

Section 2: Definition

2.13 TRANSPORT

2.14 RETAIL

- Retail** means an operation that stores, prepares, packages, serves, or otherwise provides fish, shellfish and their products directly to the consumer for preparation by the consumer for human consumption. This may be free standing seafood markets, seafood sections in grocery or department stores, packaged chilled or frozen and/ or full service.
- Packaged** means packaged in advance and displayed chilled or frozen for direct consumer pick up.
- Full Service Display** means a display of chilled fish, shellfish and their products to be weighed and wrapped by establishment personnel at the request of the consumer.

SECTION 17 - TRANSPORT

Transportation applies to all sections and is a step of the flow diagram which needs specific skills. It should be considered with the same care as the other 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 action. 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 recognised that in preparing a HACCP and/or DAP plan it is essential to consult Section 5 which provides guidance for the application of the principles of 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.

It is particularly important throughout the transportation of fresh, frozen or refrigerated fish, shellfish and their products that care is taken to minimise any rise in temperature of the product and that the chill or frozen temperature, as appropriate, is maintained under controlled conditions. Moreover, appropriate measures should be applied to minimize damage to products and also their packaging.

Potential Hazards: *Biochemical development (histamine). Microbial growth and contamination*

Potential Defects: *Decomposition, physical damage. Chemical contamination (fuel).*

Technical Guidance:

17.1 FOR FRESH, REFRIGERATED AND FROZEN PRODUCTS

- pre-cool vehicles before loading;
- avoid unnecessary exposure to elevated temperatures during loading and unloading of fish, shellfish and their products;
- load in order to ensure a good air flow between product and wall, floor and roof panels ; load stabilizer devices are recommended
- monitor air temperatures inside the cargo hold during transportation; the use of a recording thermometer is recommended
- during transportation
 - frozen products should be maintained at -18°C or below (maximum fluctuation $+3^{\circ}\text{C}$)
 - fresh fish, shellfish and their products should be kept at a temperature as close as possible to 0°C . Fresh whole fish should be kept in shallow layers and surrounded by finely divided melting ice; adequate drainage should be provided in order to ensure that water from melted ice does not stay in contact with the products or melted water from one container does not cross contaminate products in other containers.
 - [transportation of fresh fish in containers with dry freezer bags and not ice should be considered where appropriate;]
 - [transportation of fish in an ice slurry, chilled sea water or refrigerated sea water (e.g. pelagic fish) should be considered where appropriate;]
 - refrigerated processed products should be maintained at the temperature specified by the processor [but generally should not exceed 4°C].

- provide fish, shellfish and their products with adequate protection against contamination from dust, exposure to higher temperatures and the drying effects of the sun or wind.

17.2 FOR LIVE FISH AND SHELLFISH

- refer to the specific provisions laid down in the relevant sections of the code.

17.3 FOR CANNED FISH AND SHELLFISH

- refer to the specific provisions laid down in section 16.

17.4 FOR ALL PRODUCTS

- before loading, the cleanliness, suitability and sanitation of the cargo hold of the vehicles should be verified;
- loading and transportation should be made in order to avoid damage and contamination of the products and to ensure the packaging integrity.

SECTION 18 - RETAIL

In the context of recognising 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 action. 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 recognised that in preparing a HACCP and/or DAP plan it is essential to consult Section 5 which provides guidance for the application of the principles of 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.

Fish, shellfish and their products at retail should be received, handled, stored and displayed to consumers in a manner that minimizes potential food safety hazards and defects and maintains essential quality. Consistent with the HACCP and DAP approaches to food safety and quality, products should be purchased from known or approved sources under the control of competent health authorities that can verify HACCP controls. Retail operators should develop and use written purchase specifications designed to ensure food safety and desired quality levels.

Proper storage temperature after receipt is critical to maintain product safety and essential quality. Chilled products should be stored in a hygienic manner at temperatures less than or equal to 4°C (40°F), MAP products at 3°C (28°F) or lower, while frozen products should be stored at temperatures less than or equal to -18°C (0°F).

Preparation and packaging should be carried out in a manner consistent with the principles and recommendations found in Section 3, Prerequisite Programmes and Codex Labelling Standards. Product in an open full display should be protected from the environment such as use of display covers (sneeze guards). At all times, displayed seafood items should be held at temperatures and conditions that preclude the development of potential bacterial growth, toxins and other hazards in addition to loss of essential quality.

Consumer information at the point of purchase, for example placards or brochures, that inform consumers about storage, preparation procedures and potential risks of seafood products if mishandled or improperly prepared, is important to ensure that product safety and quality is maintained.

A system of tracking the origin and codes of fish, shellfish and their products should be established to facilitate product recall or public health investigations in the event of the failure of preventive health protection processes and measures. These systems exist for molluscan shellfish in some countries in the form of molluscan shellfish tagging requirements.

18.1 RECEPTION OF FISH, SHELLFISH AND THEIR PRODUCTS AT RETAIL – GENERAL CONSIDERATIONS

Potential Hazards: *see Reception 7.1, 8.1*

Potential Defects: *see Reception 7.1, 8.1*

Technical Guidance:

- The transport vehicle should be examined for overall hygienic condition. Products subject to filth, taint or contamination should be rejected.
- Product in the transport vehicle should be examined for possible cross contamination. Determine that cooked-ready-to-eat product has not been exposed to raw product or juices or live molluscan shellfish and that raw molluscan shellfish have not been exposed to other raw fish or shellfish.
- Seafood should be regularly examined for adherence to purchasing specifications.
- All products should be examined for decomposition and spoilage at receipt. Products exhibiting signs of decomposition should be refused.

18.1.1 Reception of Chilled Products at Retail

Potential Hazards: *Pathogen growth, microbiological pathogens, chemical and physical contamination, Scombrotoxin formation, C. botulinum formation*

Potential Defects: *Spoilage (decomposition), Contaminants, Filth*

Technical Guidance:

- Product temperature should be taken from several locations in the shipment and recorded. Chilled fish, shellfish and their products should be maintained at or below 4°C (40°F). MAP product, if not frozen, should be maintained at or below 3°C (28°F).

18.1.2 Reception of Frozen Products at Retail

Potential Hazards: *None likely*

Potential Defects: *Thawing, Contaminants, Filth*

Technical Guidance:

- Incoming frozen seafood should be examined for signs of thawing and evidence of filth or contamination. Suspect shipments should be refused.
- Incoming frozen seafood should be checked for internal temperatures, taken and recorded from several locations in the shipment. Frozen fish, shellfish and their products should be maintained at or below -18°C (0°F) and should be rejected if the internal temperature exceeds 0°C (32°F).

18.1.3 Chilled Storage of Products at Retail

Potential Hazards: *Scombrotoxin formation, microbiological pathogens, pathogen growth, chemical contamination, C. botulinum formation*

Potential Defects: *Decomposition, Contaminants, Filth*

Technical Guidance:

- Products in chilled storage should be held at 4°C (40°F). MAP product should be held at 3°C (28°F) or below.
- Seafood should be properly protected from filth and other contaminants through proper packaging and stored off the floor.
- A continuous temperature recording chart for seafood storage coolers is recommended.
- The cooler room should have proper drainage to prevent product contamination.
- Ready-to-eat items and molluscan shellfish should be kept separate from each other and other raw food products in chilled storage. Raw product should be stored on shelves below cooked product to avoid cross contamination from drip.
- A product rotation system to ensure first in, first out usage should be established.

18.1.4 Frozen Storage of Products at Retail

Potential Hazards: *None Likely*

Potential Defects: *Chemical decomposition (rancidity), Dehydration*

Technical Guidance:

- Product should be maintained at -18°C (0°F) or less. Regular temperature monitoring should be carried out. A recording thermometer is recommended.
- Seafood products should not be stored directly on the floor. Product should be stacked to allow proper air circulation.

18.1.5 Preparation and Packaging Chilled Product at Retail

Refer to Section 8.2.3, "Labelling".

Potential Hazards: *Microbiological pathogens, Scombrototoxin formation, pathogen growth, physical and chemical contamination, allergens*

Potential Defects: *Decomposition, Incorrect Labelling*

Technical Guidance:

- Care should be taken to ensure that handling and packaging product is conducted in accordance to guidelines in Section 3, Pre-requisite Programmes.
- Care should be taken to ensure that labelling is in accordance to guidelines in Section 3, Pre-requisite Programmes and Codex Labelling Standards especially for known allergens.
- Care should be taken to ensure that product is not subjected to temperature abuse during packaging and handling.
- Care should be taken to avoid cross contamination of ready-to-eat and raw shellfish, shellfish and their products at the work areas or by utensils or personnel.

[NOTE: New section needed re: labelling of loose products sold from retail fish counters etc.]

18.1.6 Preparation and Packaging of Frozen Seafood at Retail

Refer to Section 8.2.3, "Labelling".

Potential Hazards: *Microbiological pathogens, chemical or physical contamination, allergens*

Potential Defects: *Thawing, Incorrect Labelling*

Technical Guidance:

- Care should be taken to ensure that allergens are identified, in accordance to Section 3, Pre-requisite Programmes and Codex Labelling Standards.
- Care should be taken to avoid cross contamination of ready-to-eat and raw product.
- Frozen seafood products should not be subjected to ambient room temperatures for a prolonged period of time.

18.1.7 Retail Display of Chilled Seafood

Potential Hazards: *Scombrototoxin formation, microbiological growth, microbiological pathogen contamination, C. botulinum formation.*

Potential Defects: *Decomposition, Dehydration*

Technical Guidance:

- Products in chilled display should be kept at 4°C (40°F) or below. Temperatures of product should be taken at regular intervals.
- Ready-to-eat items and molluscan shellfish should be separated from each other and from raw food products in a chilled full service display. A diagram of display is recommended to ensure that cross contamination does not occur.

- If ice is used, proper drainage of melt water should be in place. Retail displays should be self-draining. Replace ice daily and ensure ready-to-eat products are not placed on ice upon which raw product was previously displayed.
- Each commodity in a full service display should have its own container and serving utensils to avoid cross contamination.
- Care should be taken to avoid arranging product in such a large mass/depth that proper chilling cannot be maintained and product quality is compromised.
- Care should be taken to avoid drying of unprotected products in full service displays. Use of an aerosol spray, under hygienic conditions is recommended
- Product should not be added above the "load line" where a chilled state cannot be maintained in self-service display cases of packaged product.
- Product should not be exposed to ambient room temperature for a prolonged period of time when filling/stocking display cases.

18.1.8 Retail Display of Frozen Seafood

Potential Hazards: *None Likely*

Potential Defects: *Thawing, Dehydration (Freezer Burn)*

Technical Guidance:

- Product should be maintained at -18°C (0°F) or less. Regular temperature monitoring should be carried out. A recording thermometer is recommended.
- Product should not be added above the "load line" of cabinet self-service display cases. Upright freezer self-service display cases should have self-closing doors or air curtains to maintain a frozen state.
- Product should not be exposed to ambient room temperature for a prolonged period of time when filling/stocking display cases.
- A product rotation system to ensure first in, first out usage of frozen seafood should be established.
- Frozen seafood in retail displays should be examined periodically to assess packaging integrity and the level of dehydration or freezer burn.