

2.11 CEPHALOPODS

Splitting is the process of cutting cephalopods along the mantle to produce a single fillet;

SECTION 15 - PROCESSING OF CEPHALOPODS

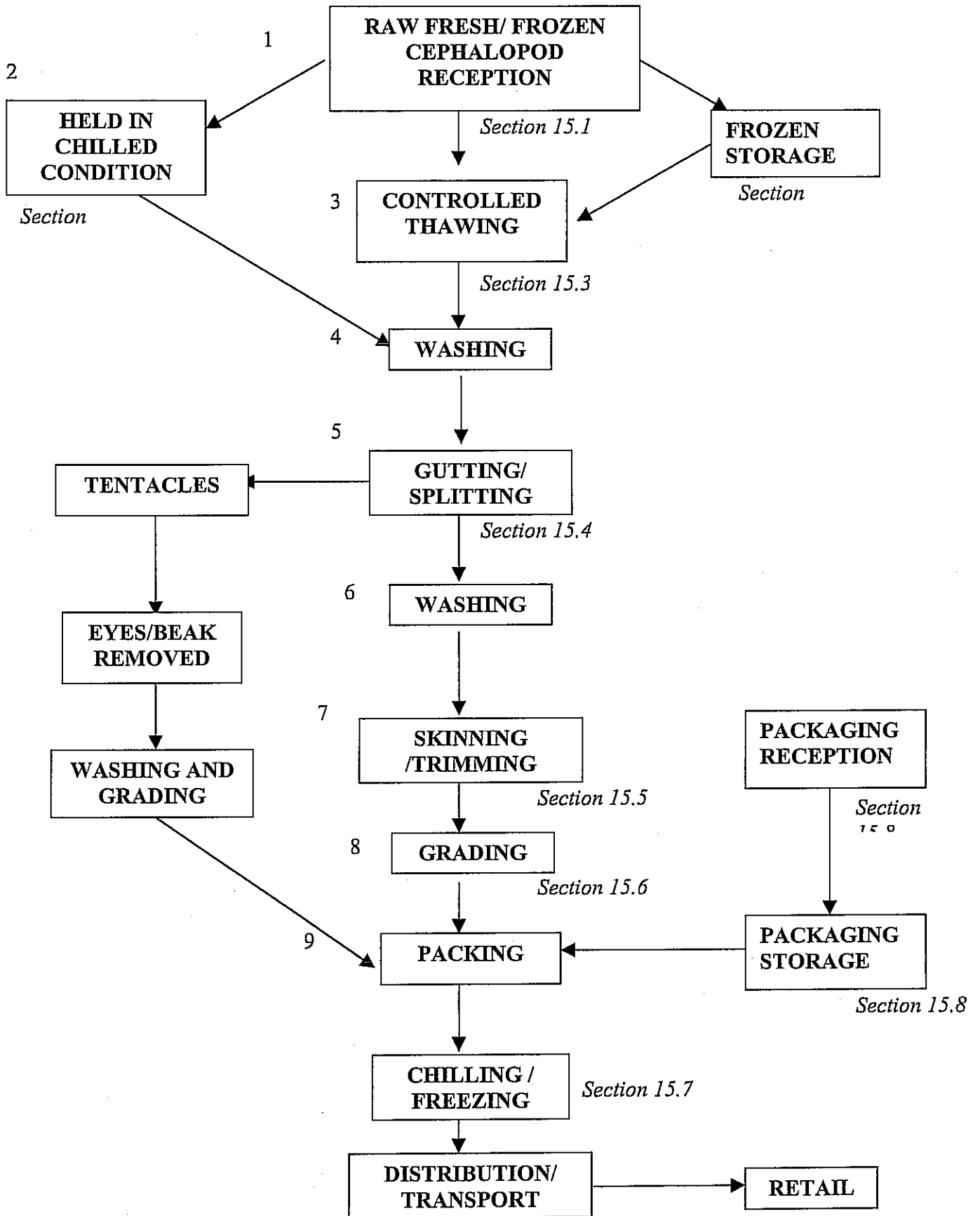
In the context of recognising controls at individual processing steps, this section provides examples of potential hazards and defects and describes technological guidelines, which can be used to develop control measures and corrective action. At a particular step only the hazards and defects, which 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.

This section applies to fresh and processed cephalopods including cuttlefish (Sepia and Sepiella), squid (Alloteuthis, Berryteuthis, Dosidicus, Ilex, Lolliguncula, Loligo, Loliolus, Nototodarus, Ommastrephes, Onychoteuthis, Rossia, Sepiola, Sepioteuthis, Symplectoteuthis and Todarodes) and octopuses (Octopus, and Eledone) intended for human consumption.

Fresh Cephalopods are extremely perishable and should be handled at all times with great care and in such a way as to prevent contamination and inhibit the growth of micro-organisms. Cephalopods should not be exposed to direct sunlight or to the drying effects of winds, or any other harmful effects of the elements, but should be carefully cleaned and cooled down to the temperature of melting ice, 0°C (32°F), as quickly as possible.

This section shows an example of a cephalopod process. Figure 15.1 lists the steps associated with receiving and processing fresh squid. It should be noted that there are a variety of processing operations for cephalopods and this process is being used for illustrative purposes only.

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.



15.1 RECEPTION OF CEPHALOPODS (PROCESSING STEP 1)

Potential Hazards: *Pathogenic micro-organisms, chemical contamination, parasites*

Potential Defects: *Damaged products, extraneous matter*

Technical Guidance:

- The processing facility should have in place a programme for inspecting cephalopods on catching or arrival at the factory. Only sound product should be accepted for processing.
- Product specifications could include:
 - organoleptic characteristics such as appearance, odour, texture etc.
 - chemical indicators of decomposition and / or contamination e.g. TVBN, heavy metals (cadmium)
 - microbiological criteria
 - parasites e.g. *Anasakis* foreign matter
 - the presence of lacerations, breakages and discolouration of the skin, or a yellowish tinge spreading from the liver and digestive organs inside the mantle, which are indicative of product deterioration.
- Personnel inspecting product should be trained and experienced with the relevant species in order to recognise any defects and potential hazards.

Further information can be found on Section 8 “Processing of Fresh, Frozen and Minced Fish” and Codex Guidelines for Sensory Evaluation of Fish and Shellfish in Laboratories.

15.2 STORAGE OF CEPHALOPODS

15.2.1 Chilled storage (Processing steps 2 and 10)

Potential Hazards: *Microbiological pathogens*

Potential Defects: *Decomposition, physical damage*

Technical Guidance:

Refer to Section 8.1.2 “Chilled Storage”

15.2.2 Frozen Storage (Processing steps 2 & 10)

Potential Hazards: *Heavy metals e.g. cadmium migration from the gut.*

Potential Defects: *Freezer-burn*

Technical Guidance:

Refer to Section 8.1.3 “Frozen Storage”.

- Consideration needs to be given to the fact that when there are high cadmium levels in the gut contents there may be migration of this heavy metal into the flesh.

15.3 CONTROLLED THAWING (PROCESSING STEP 3)

Potential Hazards: *Microbiological pathogens*

Potential Defects: *Decomposition, discoloration*

Technical Guidance:

- The thawing parameters should be clearly defined and include time and temperature. This is important to prevent the development of pale pink discoloration.
- Critical limits for the thawing time and temperature of the product should be developed. Particular attention should be paid to the volume of product being thawed in order to control discoloration.
- If water is used as the thawing medium then it should be of potable quality
- If recirculated water is used then care must be taken to avoid the build up of micro organisms

For further guidance refer to Section 8.1.4 "Control Thawing".

15.4 SPLITTING, GUTTING AND WASHING (PROCESSING STEPS 4, 5, 6, 11, 12 &13)

Potential Hazards: *Unlikely*

Potential Defects: *Presence of gut contents, parasites, shells, ink discoloration.*

Technical Guidance:

- Gutting should remove all intestinal material and the cephalopod shell if present.
- Any by-product of this process which is intended for human consumption e.g. tentacles, mantle should be handled in a timely and hygienic manner.
- Cephalopods should be washed in clean seawater or potable water immediately after gutting to remove any remaining material from the tube cavity and to reduce the level of micro-organisms present on the product.
- An adequate supply of clean seawater or potable water should be available for the washing of whole cephalopods and cephalopod products

15.5 SKINNING, TRIMMING (PROCESSING STEP 7)

Potential Hazards: *Unlikely*

Potential Defects: *presence of objectionable matter, bite damage, skin damage*

Technical Guidance:

- The method of skinning should not contaminate the product nor should it allow the growth of micro-organisms e.g. enzymatic skinning or hot water techniques should have defined time/temperature parameters to prevent the growth of micro-organisms.
- Care should be taken to prevent waste material from cross contaminating the product.
- An adequate supply of clean seawater or potable water should be available for the washing or product during and after skinning.

15.6 GRADING/PACKING (PROCESSING STEPS 8 & 9)

Refer to Section 8.2.3 "Labelling".

Potential Hazards: *chemical or physical contamination from packaging*

Potential Defects: *incorrect labelling, incorrect weight, dehydration*

Technical Guidance:

- Packaging material should be clean, be suitable for it's intended purpose and manufactured from food grade materials;
- Grading and packing operations should be carried out with minimal delay to prevent deterioration of the cephalopod;

15.7 FREEZING (PROCESSING STEP 10)

Potential Hazards: *parasites*

Potential Defects: *freezer burn, decomposition, loss of quality due to slow freezing.*

Technical Guidance:

Cephalopods should be frozen as rapidly as possible to prevent deterioration of the product and a resulting reduction in shelf life due to microbial growth and chemical reactions.

- The time/temperature parameters developed should ensure rapid freezing of product and should take into consideration the type of freezing equipment, capacity, the size and shape of the product, and production volume. Production should be geared to the freezing capacity of the processing facility;

- If freezing is used as a control point for parasites, then the time/temperature parameters need to ensure that the parasites are no longer viable need to be established;
- The product temperature should be monitored regularly to ensure the completeness of the freezing operation as it relates to the core temperature;
- Adequate records should be kept for all freezing and frozen storage operations;

For further guidance refer to Section 8.3.1 "Freezing Process".

15.8 PACKAGING, LABELS AND INGREDIENTS – RECEPTION AND STORAGE

Consideration should be given to the potential hazards and defects associated with packaging, labelling and ingredients. It is recommended that users of this code consult Section 8.5 "Packaging, Labels and Ingredients".

**APPENDIX X - OPTIONAL FINAL PRODUCT REQUIREMENTS -CEPHALOPODS
[TO BE COMPLETED]**