codex alimentarius commission

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

WORLD HEALTH ORGANIZATION

JOINT OFFICE: Via delle Terme di Caracalla 00100 ROME Tel.: 57971 Telex: 625825-625853 FAO I Cables: Foodagri Rome Facsimile: (6)5797.4593

ALINORM 95/18

JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX ALIMENTARIUS COMMISSION
Twenty-first Session
Rome, 29 June - 12 July 1995

REPORT OF THE TWENTY-FIRST SESSION OF THE CODEX COMMITTEE ON FISH AND FISHERY PRODUCTS
Bergen, Norway, 2 - 6 May 1994

Note: This document incorporates Codex Circular Letter 1994/16-FFP

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CX 5/35.2

CX 1994/16-FFP
June 1994

TO: - Codex Contact Points
- Interested International Organizations
- Participants at the 21st Session of the Codex Committee on Fish and Fishery Products

FROM: - Secretary, Codex Alimentarius Commission, Joint FAO/WHO Food Standards Programme, FAO, 00100 Rome, Italy

SUBJECT: Distribution of the Report of the 21st Session of the Codex Committee on Fish and Fishery Products

MATTERS FOR ADOPTION BY THE 21st SESSION OF THE CODEX ALIMENTARIUS COMMISSION

Draft Standards at Step 8 of the Procedure

1. Draft General Standard for Quick Frozen Fish Fillets (para. 36, Appendix II)
2. Draft Standard for Quick Frozen Raw Squid (para. 45, Appendix III)
3. Draft Revised Standard for Quick Frozen Blocks of Fish Fillets, Minced Fish Flesh and Mixtures of Fillets and Minced Fish Flesh (para. 100, Appendix IV)
4. Draft Revised Standard for Quick Frozen Finfish, Eviscerated and Uneviscerated (para. 100, Appendix V)
5. Draft Revised Standard for Quick Frozen Lobsters (para. 100, Appendix VI)
6. Draft Revised Standard for Quick Frozen Fish Sticks (Fish Fingers), Fish Portions and Fish Fillets - Breaded and in Batter (para. 100, Appendix VII)
7. Draft Revised Standard for Quick Frozen Shrimps or Prawns (para. 100, Appendix VIII)
8. Draft Revised Standard for Canned Crab Meat (para. 100, Appendix IX)
9. Draft Revised Standard for Canned Finfish (para. 100, Appendix X)
10. Draft Revised Standard for Canned Salmon (para. 100, Appendix XI)
11. Draft Revised Standard for Canned Sardines and Sardine-Type Products (para. 100, Appendix XII)
12. Draft Revised Standard for Canned Shrimps and Prawns (para. 100, Appendix XIII)
13. Draft Revised Standard for Canned Tuna and Bonito (para. 100, Appendix XIV)

14. Proposed Draft Revised Standard for Salted Fish and Dried Salted Fish of the Gadidae Family (para. 108, Appendix XV)

Governments wishing to propose amendments or comments on the above documents should do so in writing in conformity with the Guide to the Consideration of Standards at Step 8 (see Procedural Manual of the Codex Alimentarius Commission) to the Secretary, Joint FAO/WHO Food Standards Programme, FAO, via delle terme di Caracalla, 00100, Italy before **15 December 1994**.

B. DOCUMENTS TO BE ELABORATED FOR GOVERNMENT COMMENTS PRIOR TO THE NEXT SESSION OF THE COMMITTEE

Proposed Draft Codes at Step 3 of the Procedure

15. Proposed Draft Code of Practice for the Products of Aquaculture (para. 116)

The Committee agreed to return the Code to Step 3 for further redrafting bythe FAO Fisheries Department, in the light of the discussions of the Committee and government comments, and to incorporate the HACCP approach.

16. Proposed Draft Code of Practice for Frozen Surimi (para. 135)

Proposed Draft Revised Codes at Step 3 of the Procedure

The Committee agreed to have the following Codes redrafted, taking into account the recommendations of the Commission and in order to incorporate the HACCP approach.

17. Proposed Draft Revised Code of Practice for Frozen Fish (para. 127)

18. Proposed Draft Revised Code of Practice for Canned Fish (para. 127)

19. Proposed Draft Revised Code of Practice for Frozen Shrimps and Prawns (para. 127)

20. Proposed Draft Revised Code of Practice for Molluscan Shellfish (para. 127)

21. Proposed Draft Revised Code of Practice for Fresh Fish (paras. 127 and 130)

22. Proposed Draft Revised Code of Practice for Smoked Fish (para. 127)

23. Proposed Draft Revised Code of Practice for Salted Fish (para. 127)

Proposed Draft Guidelines

24. Proposed Draft Guidelines for the Sensory Evaluation of Fish and Shellfish (para. 122)

The Committee agreed that this document was more in the nature of Guidelines than of a Code of Practice and decided to have it redrafted in order to set specific criteria for the interpretation of provisions set in Codex standards.

25. Proposed Draft Appendix to the Guidelines Levels for Methylmercury in Fish (CAC/GL 7-1991): Definition of Predatory Species to which the Higher Level of Methylmercury Applies (para. 140)

This list will be prepared by the Secretariat and circulated in a separate Circular Letter.

Governments and international organizations wishing to present comments on the above points are invited to do so to the Chairman of the Committee, Dr. J. Race, Norwegian Food Control Authority, P.O. Box 8187 Dep., 0034 Oslo, Norway, with copy to the Secretary, Joint FAO/WHO Food Standards Programme, FAO, via delle terme di Caracalla, 00100, Rome Italy **before 15 December 1994**.

SUMMARY AND CONCLUSIONS

The summary and conclusions of the 21st Session of the Codex Committee on Fish and Fishery Products are as follows:

Matters for adoption by the Commission:

The Committee:

- agreed to advance to Step 8 the following Draft Standards:

  - Quick Frozen Fish Fillets (para. 36, Appendix II)
  - Quick Frozen Raw Squid (para. 45, Appendix III)
  - Quick Frozen Blocks of Fish Filets, Minced Fish Flesh and Mixtures of Fillets and Minced Fish Flesh (para. 100, Appendix IV)
  - Quick Frozen Finfish, Eviscerated and Uneviscerated (para. 100, Appendix V)
  - Quick Frozen Lobsters (para. 100, Appendix VI)
  - Quick Frozen Fish Sticks (Fish Fingers), Fish Portions and Fish Fillets - Breaded and in Batter (para. 100, Appendix VII)
  - Quick Frozen Shrimps or Prawns (para. 100, Appendix VIII)
  - Canned Crab Meat (para. 100, Appendix IX)
  - Canned Finfish (para. 100, Appendix X)
  - Canned Salmon (para. 100, Appendix XI)
  - Canned Sardines and Sardine-Type Products (para. 100, Appendix XII)
  - Canned Shrimps and Prawns (para. 100, Appendix XIII)
  - Canned Tuna and Bonito (para. 100, Appendix XIV)
  - Salted Fish and Dried Salted Fish of the Gadidae Family (Steps 5 and 8) (para. 108, Appendix XV)

Other matters of interest to the Commission:

The Committee:

- agreed to return to Step 3 the Code of Practice for the Products of Aquaculture for redrafting by the FAO Fisheries Department (para. 116)

- agreed that the Proposed Draft Code for Frozen Surimi should be redrafted at Step 3 by the Delegations of Japan and the United States (para. 135)

- agreed to revise the following Codes of Practice: Frozen Fish, Canned Fish, Frozen Shrimps and Prawns, Molluscan Shellfish, Fresh fish, Salted Fish, Smoked Fish (para. 127)

- agreed to redraft at Step 3 the Proposed Draft Code of Practice on the Sensory Evaluation of Fish and Shellfish (as Guidelines) (para. 122)

- agreed to discontinue work on the Code of Practice for Fish and Fishery Products in Controlled and Modified Atmosphere Packaging at this stage, in view of the elaboration of a general code for MAP poducts by the Committee on Food Hygiene (para. 118)

- agreed to discontinue work on the Code for the Full Utilization of Sharks in the framework of Codex, as this document should be further developed as a technical paper by the FAO Fisheries Department (para. 133)

- agreed to prepare a List of Predatory Species to which the Higher Level of Methylmercury Applies, for the next session of the Committee (para. 140)

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LIST OF APPENDICES

OPENING OF THE SESSION (Agenda Item 1)

1. The Codex Committee on Fish and Fishery Products held its twenty-first session in Bergen, Norway, from 2 - 6 May 1994, by courtesy of the Government of Norway, under the Chairmanship of Dr. John A. Race, National Food Control Authority. The session was attended by 125 delegates from 32 member countries, two observer countries and 3 intergovernmental and non-governmental organizations. A complete list of participants is included as Appendix I to this report.

2. The session was opened by Mr. Viggo Jan Olsen, Director-General of Fisheries, who welcomed the participants on behalf of the Norwegian Minister of Fisheries, and noted that the large attendance indicated great interest at the international level in the work of the Committee. He emphasized the importance of the recently finalized GATT Agreements on the Application of Sanitary and Phytosanitary Measures (SPS) and Technical Barriers to Trade (TBT) for the work of the Codex Alimentarius Commission, and noted that Codex would have to review its procedures in order to take into account all relevant factors in the decision making process, in accordance with its essential objectives of protecting the consumers' health and facilitating trade. He indicated that Norway was also facing a number of changes and challenges at the regional level, as a Member Country of the European Economic Area which entered into force on 1 January 1994 and that it had also applied for membership of the European Union.

3. He pointed out that Norway had always supported the work of Codex, particularly as the host country for the Committee on Fish and Fishery Products, where participating countries had consistently shown their willingness to participate actively and constructively in the proceedings. While trusting that the Committee would continue working in this spirit of cooperation, he wished the participants all success in their activities.

4. The Chairman informed the Committee of the request of a representative of the press to attend the session and the Committee agreed to such participation, with the understanding that this would be limited to taking notes of the proceedings.

ADOPTION OF THE AGENDA (Agenda Item 2)

5. The Committee had before it document CX/FFP 94/1, the Provisional Agenda for the meeting. The Committee adopted the Agenda with the following rearrangement in the order of items proposed by the Chairman:

- to consider the draft standards for frozen products under Agenda Item 6 immediately after Items 4 and 5, followed by the draft standards for canned products.
- to consider Item 13 on the Revision of the Codes of Practice before the other Proposed Draft Codes as it was of a general nature and the decisions of the Committee in this respect would apply to the individual codes under Agenda Items 9, 10 and 12.

MATTERS OF INTEREST (Agenda Item 3)

Matters of interest arising from FAO, WHO, the Codex Alimentarius Commission and other Codex Committees

6. The Secretariat introduced document CX/FFP 94/2, presenting the aforesaid matters of interest and gave an update on the decisions of Committee on Food Additives and Contaminants, the Committee on Methods of Analysis and Sampling and the Committee on General Principles which had met recently. The Committee especially noted that the Committee on Food Hygiene had approved the Microbiological Specifications for Quick-Frozen Cooked Crab Meat, and that the Committee on Food Additives and Contaminants had endorsed the use of EDTA in Canned Crab.

7. In reply to a question, the Secretariat confirmed that it was within the terms of reference of CCFICS to develop criteria with respect to official certificates with a view to international harmonization, and the Committee agreed that it would be useful to develop a model certificate specifically for fish inspection purposes with the objective of facilitating international trade, and suggested that CCFICS consider this matter, so as to identify the requirements to be included in such a certificate. The Committee noted the recommendations of the Commission regarding risk assessment and in reply to a question, the Chairman indicated that it was not required of the Committee to consider this question generally. With respect to its specific work on Fish and Fishery Products, the integration of the HACCP approach into the codes of hygienic practice was answering the overall objectives set forth by the Commission in this area.

WHO Study Group on Food-Borne Trematode Infections (Item 3b)

8. The Chairman of the Committee introduced document CX/FFP 94/2-Add.1 which reported on the outcome of a WHO Study Group on Food-Borne Trematode Infections which had convened in Manila, The Phillipines, 18-26 October 1993. The Study Group had identified Food-Borne Trematode Infections as major public health problem with over 40 million persons reported to be affected throughout the world. These infections were due to consumption of raw, undercooked or otherwise under-processed freshwater fish or shellfish containing the infective stages of these parasites. There were indications that the heating of fish to 70°, or the use of traditional methods such as salting, smoking, fermenting or curing of fish may be insufficient to eliminate food-borne trematode infections. The Study Group had noted that the matter was not treated in the Codex Codes of Hygienic Practice for Fish and Shellfish, and suggested that the matter should also be addressed in the Proposed Draft Code of Hygienic Practice for Aquaculture, perhaps by preparing separate codes for freshwater and seawater aquaculture.

9. The Committee expressed its appreciation to WHO for its study of this problem. It recognized the problem was one of significant importance for its future work and that there would need to be further intersectorial cooperation to study the results of heating (at different time/temperature combinations), freezing and other processing trials which would have a bearing on future Codex work. It encouraged further work by WHO in this area in cooperation with other agencies.

10. The Committee considered that the Hazard Analysis/Critical Control Point (HACCP) approach could be used effectively in the control of these parasites. The Proposed Draft Code of Hygienic Practice for Aquaculture could be revised to incorporate HACCP principles, and it was suggested that in such a case, the development of separate codes for marine and freshwater aquaculture would not be necessary.

FAO Fisheries Department

11. The Representative of FAO Fisheries Department reported on number of training courses organized by the Department in the field of quality assurance, mainly in developing countries. These courses had been organized at the regional or national level and promoted a HACCP approach in quality assurance programmes. They were intended to assist FAO member states as well as their fishing industries to meet sanitary and quality requirements of major importing countries.

12. Significant inputs for training in fish technology and quality assurance had been made by a FAO-executed DANIDA-funded project. This project over the last two years had organised over 20 training courses tailored to the needs of recipient countries and regions. It not only emphasised the HACCP approach to quality assurance but also provided substantial training and follow-up activities on improved handling practices which were essential to maintain the quality of fish and fishery products.

13. Several industry seminars were organized in Eastern and Central Europe, including Russia, aimed at providing information on modern quality assurance systems and new requirements introduced recently by major importing countries. Similar industry seminars were organized in cooperation with INFOPESCA in South America and the Caribbean and with INFOFISH in Asia.

14. It was reported that FAO was elaborating the International Code of Conduct for Responsible Fisheries as the result of the Declaration of Cancun, UNCED and a decision of FAO Conference. A specific chapter of the Code dealt with trade in fish and fishery products and would include suitable provisions related to the handling of fish as well as quality assurance of fish and fishery products.

DRAFT GENERAL STANDARD FOR QUICK FROZEN FISH FILLETS (Agenda item 4)

15. The Committee had before it the text of the Revised Draft General Standard for Quick Frozen Fish Fillets at Step 6 of the Codex Procedure (Circular Letter 1993/29-FFP, Annex II) and comments received from Brazil, France, Germany, New Zealand, Norway, Poland, Spain, Switzerland, Thailand and the United Kingdom in document CX/FFP 94/3, as well as comments from Canada, Japan, and the United States presented in Conference Room Documents CRD Canada-1, CRD Japan, CRD USA-2 and CRD-IPPA respectively. The Committee recalled that the Draft Standard had been considered at its previous session (ALINORM 93/18, paras. 28-40).

16. It was agreed to examine the Draft Standard section by section and to apply consequentially any changes of a general nature to all of the standards under discussion at the present session, as appropriate. Unless indicated below, no changes were made in individual sections or provisions of the Draft Standard.

2. DESCRIPTION

2.2 Process Definition

17. It was agreed to specify that products should be maintained in the deep frozen condition so as to maintain quality during transport, storage and distribution. It was further agreed to make reference in the Section covering Hygiene and Handling (Section 5) to the Codex Code of Practice for the Storage and Transport of Quick Frozen Foods (CAC/RCP 8-1976) which allowed for a slight unavoidable rise in temperature to -15°C especially during transport. It was noted that the provisions of this Code were consistent with the Agreement on the Transport of Perishable Foodstuffs (ATP) elaborated by the United Nations Economic Commission for Europe.

2.3.2 Presentation

18. A correction to the Spanish version of the draft in relation to the expression "pin bones" was noted.

3. ESSENTIAL COMPOSITION AND QUALITY REQUIREMENTS

3.2 Glazing

19. See also paragraph 40 below. The Committee did not agree to include a limit on the amount of glaze used, as proposed by one delegation, as the net contents declaration specifically excluded the weight of glaze (Section 6.2).

3.4 Final Product

20. Several delegations questioned the use of the expression "reasonably free" when describing the presence or absence of certain defects outlined in this Section. It was noted that each of the defects included in the Section was specifically listed and quantified in Section 8 of the Draft Standard. The Committee therefore decided to revise the introductory part of the Section so as to indicate that products would meet the requirements of standard when lots examined in accordance with Section 9 (Lot Acceptance) met the provisions of Section 8. **Classification of Defectives**. Reference to Section 7. **Sampling, Examination and Analysis** was retained.

4. FOOD ADDITIVES

21. Several Delegations and the Observer from the EC drew attention to the "horizontal approach" being adopted in the regulation of food additives and proposed that this Section be deleted or replaced with a reference to the Codex General Standard for Food Additives. The Committee noted, however, that the Draft General Standard was not complete and as yet did not cover the use of water-retention agents. It therefore decided to maintain the Section unchanged, noting that the contents of the Section would be forwarded to the Codex Committee on Food Additives and Contaminants, and that these provisions would ultimately be included in the General Standard for Food Additives. A footnote was included to this effect. The Delegation of Switzerland expressed its reservation concerning the use of water-retention agents and antioxidants in products covered by the Draft Standard.

5. HYGIENE AND HANDLING

22. The Committee agreed to include references in Section 5.2 to the Codex Code of Hygienic Practice for Aquaculture (under elaboration, see paragraphs 112 to 116, below) and the Code of Practice for the Processing and Handling of Quick Frozen Foods (CAC/RCP 8-1976) as mentioned above.

23. The Committee also agreed to incorporate limits for the presence of **histamine**. It was agreed to restrict the application of this limit to frozen fillets derived from fish of the *Scombridae* and *Clupeidae* families and other families of fish in which there was a significant potential for histamine development particularly the *Coryphaenidae* and certain members of the *Pomatomidae*. See also paragraphs 78-80 below concerning the limit established by the Committee. Since health considerations were included in this Section, the Delegation of Norway proposed to rename it "Health, Handling and Hygiene"

6. LABELLING

6.4 Labelling of Non-Retail Containers

24. The Committee agreed to specify that **storage instructions** should always appear in the labelling of non-retail containers of quick-frozen fish and fishery products, as provided for in the advice provided to Codex Committees in the Procedural Manual (Procedural Manual, 8th edition 1993, page 92, Footnote 2).

7. SAMPLING, EXAMINATION AND ANALYSES

7.4 Procedure for the Detection of Parasites

25. The Committee noted that the method was intended only to detect parasites which were aesthetically offensive to the consumer. It did not refer to parasites with a public health implication, many of which in their infective stage could only be detected microscopically. It was therefore considered that the candling test should be used only where it was technically practical to do so, and the Committee amended the title of the Section to limit the application of the test to skinless fillets.

7.5 Determination of Gelatinous Conditions

26. As no comments had been received opposing the use of the methods, the Committee removed the square brackets around this Section.

7.6 Cooking Methods

27. The Committee noted the opinion of several Delegations that the cooking temperature provided for in the Draft Standard (>70°C) was too high and would lead to undesirable textural changes. It was agreed to specify 65-70°C as the appropriate range of temperature to be used.

8. CLASSIFICATION OF DEFECTIVES

28. In view of the changes made to the Final Product Section 3.4 (3.5) (see para. 20, above) it was found necessary to amend the introductory statement to this Section and to change the title of the Section to read **Definition of Defectives** which reflected more appropriately its contents.

8.2 Foreign Matter

29. The Committee examined two proposals (Thailand, USA) for amendment to this Section, one of which deleting reference to the use of magnification, the other allowing for the use of any detection method provided that the interpretation was linked to levels consistent with good manufacturing and sanitary practices. The Committee noted that the issue at hand was not public health, as this was covered elsewhere, and that the use of any available method could lead to variable interpretation and inequitable application. It was agreed to maintain the text of the provision as drafted.

8.3 Parasites

30. It was noted that the Section did not apply to parasites of public health significance and that food-borne trematodes would therefore also be excluded from consideration in this Section.

8.3 Bones

31. It was agreed to specify that the defect should be limited to the presence of "more than 1 bone per kg of product" as defined.

8.6 Texture/Flesh Abnormalities

32. The Delegation of Japan questioned the level of moisture content required in this section and the proportion of the sample unit affected. The Committee agreed to retain the Section as drafted and removed the square brackets from the figures quoted. It agreed, however, to amend the title of the Section to read "Flesh Abnormalities" as this was considered to be a better description of its scope.

9. LOT ACCEPTANCE

33. The Committee noted that the declaration of average net contents was subject to national regulations concerning the determination of weights and measures. It was also noted that the International Organization for Legal Metrology (OIML) had provided guidance in this area. No changes were made to the Section.

Identification of Species

34. The Committee noted that work had been or was underway in several countries regarding the identification of species as claimed in the labelling of the product. It was agreed that for the time being countries should use acknowledged methods in determining the accuracy of label declarations, but that this may be a subject which the Committee would need to consider in depth at a future date.

Annex A - SENSORY AND PHYSICAL EXAMINATION

35. The Committee accepted a proposal to introduce a step-wise sensory evaluation for gelatinous condition, whch would lead to a chemical analysis only after several steps. Paragraph 5 of the Annex was amended accordingly.

Status of the Draft General Standard for Quick Frozen Fish Fillets

36. The Committee agreed to advance the Draft Revised Standard for Quick Frozen Fish Fillets to Step 8 of the Codex Procedure for adoption by the 21st Session of the Codex Alimentarius Commission. The text of the Draft General Standard is contained in Appendix II to this report.

DRAFT STANDARD FOR QUICK FROZEN SQUID (Agenda Item 5)

37. The Committee had for its consideration the aforesaid draft standard, as contained in CL 1993/29-FFP (Annex II) and the comments presented in document CX/FFP 94/4 (France, Spain), Conference Room Documents CRD USA 1, CRD Canada 1.

38. The Committee noted that amendments of a general nature which had been made to the Draft Standard for Quick Frozen Fish Fillets would be incorporated into the present text.

1. SCOPE and 4. ADDITIVES

39. The Delegation of Thailand proposed the inclusion of water retention agents in the additives section, as this was necessary when processing was intended, in view of the high water content of squid. The Committee had an exchange of views on this question and agreed that food additives should not be allowed in raw squid. There might be a technological need for their use when the products were to be further processed; however, the standard did not apply to products intended for further processing. The Committee agreed to add a statement to this effect in the Scope, which would also be consistent with the other standards for frozen fish and fishery products, and to indicate that the standard applied to "quick frozen raw squid".

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

40. The question of glazing with clean sea water (Section 3.2) was raised by one Delegation and the Committee agreed that as this was current practice for some products, provisions should be included so as to ensure the safe use of the process. The Observer from the EC informed the Committee of the provisions of Directive 91/493 in this area, which does allow the use of clean sea water for glazing purposes. The Committee agreed to include a text allowing for the use of sea-water glazing in the present text and in other relevant standards. A corresponding statement was included in the labelling Sections of these Standards.

5. HYGIENE AND HANDLING

41. The Delegation of the United States indicated that squid aquaculture was currently at an experimental stage but that it was intended to develop it commercially, and the Committee took note that a reference to the Code of Practice for Aquaculture might be relevant in the future.

6. LABELLING

6.1 Name of the Food

42. The Committee agreed to harmonize this section with the wording used in the other standards and to include a reference to sea-water glazing as mentioned above.

7. SAMPLING, EXAMINATION AND ANALYSES

7.3.1 Determination of Net Weight of Products Covered by Glaze

43. The Committee had an exchange of views on the reference to a temperature and volume of water required in Method (2) and the possibility for more flexibility in this regard. After an extensive discussion on this method, the Committee came to the conclusion that additional work would be necessary to define

the adequate method for the different types of products (whole squid, rings and pieces). The Committee agreed that a Working Group should study this issue of net weight determination in all standards and submit a report at the next session. The Delegation of the United States agreed to serve as the lead with Canada, France, Germany and the United Kingdom volunteering to serve on this Working Group. Participation by other countries was encouraged. It was further agreed that the Working Group would hold meetings as necessary to acomplish this task.

Colour

44. The Committee agreed that as colour in squid was an indication of decomposition, this provision should be incorporated into Section 8.4 (now 8.3). Odour and Flavour.

Status of the Draft Standard for Quick Frozen Squid

45. The Committee agreed to advance the Draft Standard to Step 8 of the Codex Procedure for adoption by the 21st Session of the Commission. The revised text is attached to this report as Appendix III.

DRAFT REVISED STANDARDS FOR FISH AND FISHERY PRODUCTS (Agenda item 6)

46. The Committee recalled that it had, at its last Session, advanced the proposed draft revised standards for a number of canned and quick frozen fish and fishery products to Step 5 of the Procedure (ALINORM 93/18, paras. 66-109) The proposed draft revised standards were subsequently adopted by the Commission at Step 5 and an amended version of the texts distributed to Governments and interested international organizations at Step 6 under cover of Codex Circular Letter 1993/29-FFP. The Committee had before it the revised texts as contained in the above Circular Letter and comments from several countries in the following documents: CX/FFP 94/5 (Brazil; Costa Rica; Denmark; Egypt; France; Germany; Mexico; Morocco; New Zealand; Poland; Spain; Switzerland; Thailand; United Kingdom), CRD Japan, CRD Canada, CRD USA-1, and CRD IPPA, containing the comments of these countries and organizations respectively. Additional comments from Thailand were available in an un-numbered document. The Chairman noted that the objective of the revision was to simplify and rationalize the Standards as was provided for in the Medium-Term Plan of the Codex Alimentarius Commission, and that a comprehensive revision of individual provisions of the Standards was not envisaged.

47. The Delegation of France remarked that account had to be taken of more recent developments especially the conclusion of the Uruguay Round of Trade Negotiations and the Agreements on the Application of Sanitary and Phytosanitary Measures (SPS) and on Technical Barriers to Trade (TBT). In this regard, the Delegation expressed the opinion that the revised standards had to be acceptable to a large number of states, and that provisions contained in several of the Draft Revised Standards meant that this might not be the case. The extended lists of fish species included under certain denominations or the use of food additives permitted in some countries but not in other could lead to trade distortions and reduced consumer protection. The Delegation stressed that Codes of Practice were developed as advisory texts and that it would be inappropriate to use them as mandatory obligations on governments.

48. The Committee noted that the general issue of the status of acceptance of Codex Standards and the application of Codes of Practice and other advisory texts was still under consideration by the Committee on General Principles. It was noted, however, that the SPS Agreement provided considerable scope for the use of equivalent procedures aimed at achieving specified objectives, and that the Codes of Practice should be seen as only one of a group of several procedures available.

DRAFT REVISED STANDARDS FOR QUICK FROZEN FISH AND FISHERY PRODUCTS

49. As decided previously (see para. 5 above) the Committee first considered the Draft Revised Standards for Quick Frozen products. It was agreed to incorporate into the Draft Revised Standards all

of the amendments adopted in relation to the Draft Revised Standards for Quick Frozen Fish Fillets and Quick Frozen Squid except where these would be inconsistent with the commodity under consideration. In addition, the following observations were made on certain specific sections of the Draft Revised Standards.

50. The Delegation of Switzerland expressed its reservation on the use of phosphate-based water/moisture retention agents in all of the Standards in which these substances were included and the Delegation of France supported this reservation where non-processed products were concerned.

DRAFT REVISED CODEX STANDARD FOR FROZEN BLOCKS OF FISH FILLET, MINCED FISH FLESH AND MIXTURES OF FILLETS AND MINCED FISH FLESH

6. LABELLING

6.1.1 Name of the Food

51. It was noted that, due to wide-spread trade in these commodities, there was often no national common name available in the countries in which the product, or products prepared from it, was being sold. This created a potential for consumer deception as the name chosen was often based on fish species of higher value that the product itself. The Committee recommended that in such cases national authorities should refer to the FAO nomenclature wherever possible.

6.1.4 Proportion of Mince

52. The Committee was unable to accept a proposal to lower to 5% the level of addition of minced flesh which had to be declared on the label although several Delegations were in favour of this. It was noted that the applicable method of analysis was accurate only for levels of mince greater than 10%.

8. DEFINITION OF DEFECTIVES

8.5 Odour and Flavour

53. The Committee likewise did not accept a proposal to delete reference to the presence of feed odours as an objectionable odour or flavour. It recognized that feed flavours might arise in fish species derived from aquaculture, but that it was only when these became **objectionable** that they would be considered as a defect.

DRAFT REVISED STANDARD FOR QUICK FROZEN FINFISH, EVISCERATED AND UNEVISCERATED

1. SCOPE

54. The Delegation of Denmark raised the question of the inclusion of fish frozen in brine and intended for further processing (canning), as the temperature of this product (around - 9 °C) could not meet the requirement for quick frozen finfish. The Committee considered the possibility of including brine frozen fish in the standard and noted that as a number of amendments would be required, that would not be feasible at this stage. Specific provisions for this product could, however, be elaborated at a later date. It was also confirmed that the standard should apply to fish intended for processing as well as for direct consumption, so that no further clarification was required and it was agreed to retain the Scope as currently drafted. A footnote was added to the effect that the Standard did not include brine frozen products intended for further processing.

4. ADDITIVES

55. Some Delegations indicated that antioxidants were needed for fatty fish and that this section should include ascorbic acid, which was used in practice to serve this specific technological need; this additive was also allowed in the provisions for Quick Frozen Blocks. Other Delegations did not share this view and were opposed to the use of anti-oxidants in quick frozen finfish. The Committee agreed to include Ascorbic acid and its Sodium and Potassium Salts at a level of 1g/kg, without giving a definition of fatty fish, as antioxidants might also be needed for other types of fish, and noted that this section would be forwarded to the Committee on Food Additives and Contaminants for endorsement and inclusion in the General Standard for Food Additives.

7.3.2 Determination of Net Weight Products Covered by Glaze

56. Some Delegations pointed out that the proposed method did not satisfy its purpose, particularly in the case of large fish or eviscerated fish. After an exchange of views on this matter, the Committee came to the conclusion that another method would have to be elaborated for products covered by glaze.

8.4 Texture

57. The Committee agreed to retain the current section as 8.4.1 and to add 8.4.2 **Flesh Abnormalities**, as both criteria were relevant in this case.

DRAFT REVISED STANDARD FOR QUICK FROZEN LOBSTERS

1. SCOPE

58. The Committee agreed to delete the sentence referring to speciality products as these were not covered by the standard. It was noted that these products were covered by the provisions of the General Standard for Food Labelling as far as labelling was concerned.

4. ADDITIVES

59. The Delegation of Sweden, supported by Norway, expressed its opposition to the use of sulphites as it could cause severe hypersensitive reactions, especially among persons already suffering from asthma. The Delegation of Norway also questioned the technological need for this additive in lobsters. The Delegations of Switzerland and France were of the view that the use of phosphates and antioxidants was not justified in lobsters. The Observer from South Africa indicated that sulphites answered a technological need for deep sea lobsters. The Committee had an exchange of views on the possibility to reduce the level for sulphites and, noting that the lower level of 30mg/kg applied to the cooked product for consumption, agreed to retain this value. The Delegation of the United States stressed the need to carry out the analysis for sulphites on the cooked lobster.

6.1 The Name of the Food

60. The Delegation of Japan objected to the inclusion of "Crawfish" as a synonym for Rock Lobster as this might create confusion. The Committee however recalled that the list of names proposed was the result of a consensus achieved after extensive debate and agreed to retain the current list, including crawfish.

7.1 Sampling and 7.4 Determination of Count

61. Some delegations pointed out that these sections needed extensive review as it was generally not adequate for the product concerned. An informal working group met during the session to address this question and the Committee adopted its recommendations in Section 7.1 for (i) Sampling of lots for

examination of the product and (i) Sampling of lots for examination of net weight, (iii) and (iv) procedure to determine the net weight. It was also agreed to clarify Section 7.4 Determination of Count.

8.5 Objectionable Matter

62. The Committee agreed to delete this section as it dealt with commercial quality and would be transferred to the Code of Practice for Quick Frozen Fish, as previously agreed.

DRAFT REVISED STANDARD FOR QUICK FROZEN FISH STICKS (FISH FINGERS), FISH PORTIONS AND FISH FILLETS -BREADED OR IN BATTER

2. DESCRIPTION

63. The Committee retained dimensions contained in the **Product Definition** for "Fish Stick" (Section 2.1.1), as this was considered to be a well-recognized trade definition.

3.2 Final Product

64. Several delegations proposed that the proportion of fish core in these products should be raised to 60% in the case of fish sticks and 75% in the case of fillets. The Committee noted, however, that the standard covered a very wide range of presentations and agreed to retain the minimum of 50%. It was further suggested that a declaration of the amount of fish core present should be made in the labelling. The Committee, noting that this was a matter on which general guidance was required, decided to refer the matter to the Codex Committee on Food Labelling.

4. FOOD ADDITIVES

65. The Committee agreed to include sodium hexametaphosphate as Moisture/Water Retention Agent in order to maintain consistency with the provisions for the base product (Quick Frozen Blocks). The Observer from the EC indicated that the use of several of the additives listed was not foreseen in Community legislation.

7. SAMPLING, EXAMINATION AND ANALYSES

66. The Committee deleted reference to the provision in Section 8 concerning **coating defects** and the method to be used for assessing these. The Committeed noted that an AOAC method for the determination of the proportion of fish core was already included in the standard and referred to in Section 7.4, and the Secretariat was requested to confirm with AOAC whether the alternative WEFTA method (Annex C) had also been published by the AOAC and the Committee agreed that if this were the case, the method should be included by reference only. The Committee further agreed that the method for the determination of fish fillets and minced fish flesh (Annex B) should not be included in the standard (Section 7.6) and Annex B was therefore deleted. It was agreed that this method should be redrafted by Germany in the framework of WEFTA and presented to the Committee at a later date for possible reintroduction in the standard.

DRAFT REVISED STANDARD FOR QUICK FROZEN SHRIMPS OR PRAWNS

1. SCOPE

67. The Committee agreed to specify that the standard applied to both peeled and unpeeled products. It also agreed to delete the statement extending the Scope of the standard to all products containing 50% or more of quick frozen shrimps or prawns, with the understanding that such composite products would be dealt with through the use of adequate general labelling provisions.

2. DESCRIPTION

2.1 Product Definition

68. In regard to a question raised by the Delegation of Chile, the Committee noted that all of the species in all of the families mentioned were included in the Standard. However, the Committee did not agree to amend the Standard to include langoustine-species of the family *Galatheidae* (*Cervimunida johni*, *Pleuroncodes monodon*) and of the family of *Nephropsidae* as proposed by the Observer from South Africa. It noted that there were procedures by which additional species could be included in the Standard (or in the Standard for Quick Frozen Lobsters) provided that adequate information was available to show that the products from the species proposed were similar to the products contained in the Standard. The Committee invited those countries which had proposed additional species to provide such information at the earliest opportunity.

2.3 Presentation

69. The Committee did not accept a proposal to include provisions for size grading, noting however that the products covered by the standard were usually traded by count per kilogram or pound (Section 2.3.2).

4. FOOD ADDITIVES

70. The Delegation of Sweden reiterated its objection to the use of sulphites and objected to the use of colours. The Delegation of Switzerland stated its opposition to the use of phosphates and colours. The use of glucono-δ-lactone in accordance with Good Manufacturing Practice was proposed as an alternative to sulphites. The Committee did not accept these proposals.

8. DEFINITION OF DEFECTIVES

8.4 Discolouration

71. In view of the possibilty of using sulphites in these products, it was proposed to lower the proportion of shrimp affected by discoloration in any sample unit. However, it was recognized that seasonal discoloration, especially of the head, was a known defect which affected aesthetic quality but not fitness for consumption. The Committee made no changes, but agreed to consider the matter in further detail at its next Session should sufficient information from field trials become available.

DRAFT REVISED STANDARDS FOR CANNED FISH AND FISHERY PRODUCTS

DRAFT REVISED STANDARD FOR CANNED CRAB MEAT

1. SCOPE

72. The Committee recognized that the proposed wording of the Scope of the Revised Draft Standard was insufficient to describe which products were included and which were excluded from the Standard. It agreed to reinstate the Scope as contained in the present Codex Standard for this product.

4. FOOD ADDITIVES

73. The Committee agreed to the inclusion of Calcium Disodium EDTA as a sequestrant, noting that this provision had already been endorsed by the Codex Committee on Food Additives and Contaminants (ALINORM 95/12, para. 50). The Delegation of Switzerland objected to this decision. The Committee confirmed the inclusion of Disodium Diphosphate in the Standard as a pH regulating agent in association with phosphoric acid, noting that these also had a mild sequestering effect.

5. HYGIENE AND HANDLING

74. Reference was made to the Proposed Draft Code of Hygienic Practice for Products of Aquaculture, noting that some species of soft-shelled crab were produced by this method.

6. LABELLING

75. Although no changes were made in this Section, the Committee noted the widespread marketing of products derived from other sources under names similar to, or containing the word "crab". It requested the Codex Committee on Food Labelling to consider developing generic advice on the labelling of substitute or imitation products of this nature.

DRAFT REVISED STANDARD FOR CANNED FINFISH

1. SCOPE

76. The Committee agreed to indicate that the standard applied to canned finfish "packed in water, oil or any other suitable media", as this would clarify the presence of other ingredients, as set out in the second sentence.

4. ADDITIVES

77. The Committee recalled that the provisions for additives had previously been endorsed as part of the Standard for Canned Mackerel and Jack Mackerel and some delegations expressed their concern that an extension to all finfish might not be warranted in all cases. It was noted that the additives provisions would be forwarded to the Committee on Additives and Contaminants for endorsement. The Delegation of Denmark suggested to follow the terminology for "natural" smoke flavours used in the Guidelines of the Council of Europe, namely "smoke condensates and smoke preparations" if a limitation to "natural" was required. The Delegation of France expressed its objection to the use of acetic acid in specialty products with vinegar where synthetic vinegar should not be allowed.

5. HYGIENE AND HANDLING

78. Following its earlier decision to include provisions for histamine in view of their relevance in specific families (see para. 23 above), the Committee considered proposals for a specific level. Some delegations supported the level of 20mg/100g as currently proposed; other delegations were in favour of a lower level of 10 mg/100g. It was pointed out that not enough epidemiological data were available on histamine intoxication, as it often took a mild form. The Secretariat informed the Committee that no evaluation had been carried out by JECFA, and that no specific data were available in the framework of the International Programme on Chemical Safety (IPCS); it would be however possible to ask JECFA to undertake an evaluation of histamine. The Committee would however have to determine whether a histamine provision was required to address a direct health hazard or as an indicator of poor quality. In the first case, it would probably fall under the scope of the SPS Agreement and such a measure should be based on thorough scientific evaluation.

79. The Committee had an extensive exchange of views on the rationale for the determination of a histamine level. Some delegations indicated that low levels of histamine were not toxical in themselves but should be considered as an indicator of inadequate handling or poor quality before handling. The Observer from the EC informed the Committee that a level of 10mg/100g had been established in the EC as histamine itself was an indicator of quality but the potential direct toxicity of other amines associated with it had to be taken into account as well. On the suggestion of the Delegation of Canada, the Committee agreed to adopt the level of 20mg/100g in the Section on Hygiene, as related to the safety aspects involved, and to refer to a level of 10mg/100g as an indicator of decomposition. The following new Section was therefore added to the present standard and other relevant standards:

3.3 Decomposition

Canned finfish of the families *Scombridae*, *Scombresocidae*, *Clupeidae*, *Coryphaenidae*, *Pomatomidae* shall not contain more than 10mg/100g of histamine based on the average of the sample unit tested.

80. The Delegation of Morocco, while noting that this decision adequately balanced the objectives of ensuring the safety and quality of the product, drew the attention of the Committee to the necessity for associating the levels proposed with a suitable methodology. The Delegation of the United States informed the Committee of the availability of AOAC Method 977.13 (15th Edition, 1990) (Fluorimetric Method) for the determination of histamine. The Committee agreed to include this method as Section 7.6 and to request specific comments at Step 8 by Circular Letter on it, pending its endorsement by the Committee on Methods of Analysis and Sampling.

DRAFT REVISED STANDARD FOR CANNED SALMON

1. SCOPE

81. The Committee discussed a proposal to allow other packing materials besides salmon oil and agreed to amend the scope to indicate that "salt, water, salmon and/or other edible oils may have been added", as the standard no longer applied exclusively to Pacific salmon. It was also agreed to delete the reference to "Pacific" Salmon in Section 2.1.1. It was noted that the inclusion of other edible oils in the standard entailed the inclusion of a method for the determination of drained weight. It was agreed that the method referred to in the Canned Finfish Standard was appropriate and this method was therefore included in the present standard only where products packed in edible oils were concerned. The Delegation of Denmark expressed its view that the definition of "salmon" in general created some difficulties, especially where smoked salmon was concerned and proposed the inclusion of another species, which was not however adopted by the Committee.

82. In Section 2.3 Presentation, the Committee agreed to editorial changes in order to make it more explicit.

3.2 Other ingredients

83. In order to take into account the amendment of the Scope, the Committee agreed to add to the end of this Section the general statement on other ingredients included in the other standards.

6.1 Name of the Food

84. The Committee agreed to delete the list of species and their designation and include a general statement consistent with the other standards, in order to recognize that the designation should comply with the practice of the countries concerned. It was also agreed to require the name of the packing media, which was consistent with the Canned Finfish Standard.

DRAFT REVISED STANDARD FOR CANNED SARDINES AND SARDINE-TYPE PRODUCTS

1. SCOPE

85. The Committee agreed to refer to "fish content" instead of "sardines" in order to avoid confusion with sardine-type products in this Section and throughout the standard. The Observer from the EC indicated that the EC provision for speciality products referred to a minimum fish contents of 25% instead of 50%.

2.1 Product Definition

86. The Chairman pointed out that the proposed text was the result of a compromise solution reached after an extensive debate over the previous sessions and that the Commission had taken a decision concerning the inclusion of species and had approved a specific procedure for the evaluation of characteristics of new species proposed for inclusion in a standard.

87. Three delegations proposed the following amendments to the list:

Chile	*Clupea bentinki*
Mexico	*Opisthonema libertate*
	Etrumeus microps
Iran	*Dissumeria acuta*
	Clupea engraformis
	Clupea grimi
	Clupea delicatella

88. Some delegations expressed the view that the Standard should allow other species in addition to *Sardina pilchardus* to be referred to as sardines. However, after an exchange of views on this question, it appeared there was no change in the different positions put forward, and the Committee agreed to retain this section as currently drafted. The Observer from the EC indicated that, according to EC legislation, no other species could be referred to as sardines. The Committee subsequently also agreed to include a statement in Section 2.3 to the effect that species should not be mixed.

89. In Section 2.1.2, the Committee noted that according to the present wording countries had the choice of the presentation as eviscerated or not. The Committee agreed to correct the translation of the French version, as the text should refer to "reins" (kidney).

4. ADDITIVES

90. The Committee noted the comments of the International Pectin Productors Associations and agreed to refer to "Pectins". It was also agreed to separate Modified Starches as in the Additives Section of the Canned Finfish Standard.

6.1 Name of the Food

91. The Committee agreed to retain this section without amendment, as a consequence of the decision taken under Section 2.1. The Delegations of Brazil and Chile expressed their reservation on this decision as they felt that the use of "sardine" should not be restricted to *S. pilchardus* and should apply to similar species. The Delegation of Morocco strongly defended the exclusive use of the name "Sardines" for *S. pilchardus*.

DRAFT REVISED STANDARD FOR CANNED SHRIMPS OR PRAWNS

2. Description

2.3.5 Size

92. After some discussion, the Committee decided not to transfer the prescribed size descriptions into an advisory text as it was recognized that size designations for this product played a more important role in providing information to the consumer than was the case in other related standards. The Committee noted, however, that due to the inherent size characteristics of different species the classification should be used with care in order to avoid misleading the consumer. It was agreed that the classification system would need to be reviewed at an early opportunity to take into account different commercial designations.

4. FOOD ADDITIVES

93. The Delegations of Sweden and Switzerland reiterated their opposition to the use of colours in these products and the latter Delegation also stressed its opposition to the use of $CaNa_2EDTA$. The Delegation of France proposed the use of glucono-δ-lactone at a level of 3.5 g/kg and sorbitol at a level of 10 g/kg as an alternative to the use of $CaNa_2EDTA$. The Committee noted this proposal, but no changes were made in the Standard at this time. The Observer of the EC stated that the use of Amaranth (INS 123) was not permitted by proposed EC legislation. On the proposal of the Delegation of the United Kingdom, The Committee agreed to ask the advice of the Committee on Food Additives and Contaminants on the carry over of SO_2 from raw material in the end-product.

8. DEFINITION OF DEFECTIVES

8.4 Discolouration

94. In view of the processing techniques used in relation to these products, especially peeling, deheading and the optional use of additives, it was felt that the tolerance for discoloration needed to be stricter than for the related quick frozen procucts. The number of affected shrimp allowed in an acceptable sample unit was therefore reduced from 25% to 15%.

DRAFT REVISED STANDARD FOR TUNA AND BONITO

1. SCOPE

95. The Committee recalled its earlier decision in relation to Sardines and Sardine-Type Products and amended the Draft Revised Standard throughout the text to read "fish" or "the product" instead of simply "tuna" in order to avoid confusion or misinterpretation. The Observer from the EC indicated that the EC provision for speciality products referred to a minimum fish contents of 25% instead of 50%.

2.1 Product Definition

96. There was extensive discussion on the species of fish to be included and whether or not these should be categorized as either "tuna" or "bonito". As a compromise, it was agreed to retain the list of fish species contained in the present Codex Standard, with suitable updating and corrections in regard to the scientific nomenclature of the species. The Committee requested those countries which had proposed new species for inclusion in the list to provide appropriate taxonomic, commercial and other relevant data in accordance with the procedure which the Committee and the Commission had used for the incorporation of new fish species into existing standards. Several Delegations expressed their interest in including species of the Genus *Auxis* and additional species of the Genus *Sarda* in the list. The Delegation of Spain objected to the use of a single list for tuna and bonito species.

97. It was also agreed that the Standard should be extended to cover presentations of tuna and bonito in a variety of suitable packing media including sauces. The Committee therefore amended the Sections on **Food Additives** (identical to the corresponding Section in the Draft Revised Standard for Canned Finfish), **Labelling**, and **Sampling, Examination and Analysis** to cover such products.

2.3 Presentation

98. The Committee agreed to reduce the tolerances identified in square brackets in paragraphs 2.3.2 and 2.3.3 to 30%. Paragraph 2.3.3 was amended to include reference that the muscular structure of the flesh was retained in the product defined as flake(s).

6.1 Name of the Food

99. The Committee decided to delete "bonito-tuna" as a Name of the Food in order to avoid confusion or misleading the consumer.

Status of the Revised Draft Standards for Fish and Fishery Products

100. The Committee advanced all of the above standards to Step 8 of the Procedure and submitted them to the Commission for adoption. The texts of the Revised Draft Standards are contained in Appendices IV to XIV to this report.

PROPOSED DRAFT REVISED STANDARD FOR SALTED FISH AND DRIED SALTED OF THE GADIDAE FISH FAMILY (Agenda Item 7)

101. The Committee had before it document CX/FFP 94/6, a reprint of the current version of the standard, and Addendum 1, presenting the comments of Thailand and the United Kingdom in reply to CL 1992/17-FFP. The Chairman recalled that the last session of the Committee had decided to request further comments on this Proposed Draft, with particular emphasis on the amendment of the Scope Section in order to include all fish products concerned. The comments of Norway were contained in CRD Norway 1 and 2, proposing a revision of the standard which had been prepared in consultation with a number of interested countries.

1. SCOPE

102. The Committee agreed to define the product more precisely and to mention the minimal salt content of 12% in the case of partial saturation.

2.2 Process Definition

103. The Comittee agreed to transfer to Section 6.1.3 (Name of the Food) the restriction on the use of the name "Klippfish" to products prepared from fish with at least 95% salt saturation in the brine.

4. ADDITIVES

104. The Delegation of France proposed to include sulphites as a preservative as this was needed for fish with a salt content of about 12%, and the Observer from the EC indicated that the level allowed in the Community was 200 mg/kg. The Committee however agreed to retain the current additives provisions.

6.1 The Name of the Food

105. It was agreed to include distinct sections for Klippfish and for Wet Salted Fish.

7. SAMPLING, EXAMINATION AND ANALYSES

106. It was pointed out that as the provisions of the standard referred to salt content, a suitable method was required to define it, and the Committee agreed on the principle to include a section (7.4) on the Determination of Salt Content, to be elaborated by the Delegation of Germany in cooperation with Norway, as such a method could not be identified at the present time. The Secretariat indicated that this would not delay the advancement of the standard in the Step Procedure, as it could be proposed and subsequently endorsed by the Codex Committee on Methods of Analysis and Sampling (CCMAS). It was also noted that the volumes of the Revised Codex Alimentarius on commodity standards were now published without including the methods of analysis, which would be included in a separate Volume allowing more regular up-dating.

107. It was noted that the standard would also include amendments of a general nature as agreed above (para. 16).

Status of the Proposed Draft Revised Standard on Salted Fish and Dried Salted Fish of the Gadidae Family of Fishes

108. The Committee agreed to advance the Proposed Draft Standard to Step 5 of the Procedure and to recommend that the Commission adopt it at Step 8 with the omission of Steps 6 and 7. The revised text is attached to the present report as Appendix XV.

METHODS OF ANALYSIS FOR FISH AND FISHERY PRODUCTS (Agenda Item 8)

109. The Committee had before it the proposed methods of analysis as contained in ALINORM 93/18 - Appendix XVI and comments on these methods in document CX/FFP 94/7 from Germany, Thailand and the United Kingdom.

a) Determination of Drained Weight of Canned Shrimps or Prawns in Gelled Media

110. Noting that there was little trade in products of this type and that therefore it had not been possible to determine the effectiveness of this method, the Committee decided to take no further action on its development.

b) Thawing Procedure for Quick Frozen Fish Blocks

111. The Committee noted the extensive information provided by the Delegation of the USA in regard to the effectiveness of this method.[1] The Committee adopted the method as proposed for inclusion in the Draft Revised Standard for Frozen Blocks of Fish Fillet, Minced Fish Flesh and Mixtures of Fillets and Minced Fish Flesh.

PROPOSED DRAFT CODE OF PRACTICE FOR THE PRODUCTS OF AQUACULTURE (Agenda item 9)

112. The Committee considered document CX/FFP 94/8, presenting the revision of the Proposed Draft Code by the FAO Fisheries Utilization and Marketing Service (FIIU) in the light of the discussions held at the last session of the Committee and further government comments in reply to CL 1992/17-FFP. Additional comments were contained in documents CX/FFP 94/8-Add.1 (Canada) CRD WHO, CRD Japan, and CRD USA.

113. The Committee considered whether molluscs should be included in this code, which presently applied to only fish and crustaceae. The Observer from the EC noted that certain sections of the Code related to animal health, which was the competence of the Office International des Epizooties (OIE). The Representative of FAO indicated that where aquaculture was concerned, provisions concerning animal health may have to be included when they were closely related to human health and safety requirements. Some delegations expressed the view that it had not been intended to cover molluscs and it was noted that the Code of Practice for Molluscan Shellfish could be amended to make reference to the Aquaculture Code. The Committee agreed that the Code would not apply to molluscs at this stage.

114. The Committee also noted the suggestion of WHO (written comments) to establish two distinct codes for fresh water and sea water aquaculture in order to provide specific guidance for the control of food-borne trematodes. However, it was considered that a risk analysis or HACCP approach could address this issue in a general document.

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[1] *Codex Thawing Procedures for Quick Frozen Fish Blocks: Air thaw and water immersion methods* Jane E. Fox-Dobson, National Marine Fisheries Service, Silver Spring MD (USA); 1994. Copies available from the author.

115. In reply to a question, the Chairman indicated that the HACCP approach would be incorporated into the draft, which would ensure that health hazards associated with trematodes were taken into account.

Status of the Proposed Draft Code of Practice for the Products of Aquaculture

116. The Committee agreed that the text would be returned to Step 3 for redrafting by the FAO Fisheries Department, in the light of the discussions of the Committee and government comments, for consideration by the next session of the Committee.

PROPOSED DRAFT CODE OF PRACTICE FOR FISH AND FISHERY PRODUCTS IN CONTROLLED AND MODIFIED ATMOSPHERE PACKAGING (Agenda item 10)

117. The Committee considered the aforesaid Draft, as contained in document CX/FFP 94/9 and the comments included in CX/FFP 94/9-Add.1 (Canada, New Zealand) and CRD France 1. The Delegation of Norway introduced the document and recalled that it had redrafted the Code in the light of the discussions of the last session with the assistance of a group of interested countries. The Delegation indicated that this code should be considered in conjunction with the Code of Practice for Fresh Fish, and it was for the Committee to decide whether the development of a separate Code for products under Modified Atmosphere Packaging (MAP) was required at this stage. The Observer from the EC pointed out that marine mammals (mentioned under Section 6.1) should be excluded from the scope, and that the code should take into account non-pasteurized products.

118. The Committee noted that the elaboration of a Code of Hygienic Practice for Refrigerated Prepackaged Foods with Extended Shelf-Life by the Committee on Food Hygiene was of particular relevance to the work of the Committee in this area. The Chairman noted that specific provisions relating to fish and fishery products might be included in such a general code and that this question would require further consideration in the light of the previous decisions on the general revision of the Codes of Practice, including the Code of Practice for Smoked Fish. In this perspective, the Committee agreed not to proceed with the development of the code at this stage, and to reconsider the matter at a later date in the light of the decisions taken by the Committee on Food Hygiene in this respect.

PROPOSED DRAFT CODE OF PRACTICE FOR THE SENSORY EVALUATION OF FISH AND SHELLFISH (Agenda Item 11)

119. The Committee recalled that following a review of inspection procedures (sensory evaluation) for fish and shellfish at its last session, it had agreed to elaborate a comprehensive code a practice for Sensory Evaluation for application in the inspection of fishery products (ALINORM 93/18, paras. 19-24). Mr. P. Howgate (UK), Consultant to FAO and the Codex Secretariat, had been invited to prepare a draft which he introduced in document CX/FFP 94/10. Government comments were presented in paper CX/FFP 94/10-Add.1 (Canada, New Zealand) and USA CRD 2.

120. Mr. Howgate pointed out that the paper was more in the nature of guidelines than a code of practice as this was seen to be more relevant to the subject matter. The paper considered that most official sensory inspection of fish and shellfish was carried out by inspectors as part of their normal work and not by highly trained or professional testers. A considerable part of the document was therefore dedicated to training of personnel and the development of their skills as sensory inspectors.

121. The Committee expressed its appreciation of the work carried out by Mr. Howgate on this valuable document. However some Delegations felt that emphasis should have been given to criteria for the interpretation of the decomposition (texture, odour and flavour) provisions contained in the Revised Codex Standards so as to demonstrate fitness for human consumption. These Delegations stated that the demands of inspection authorities in importing countries required a set of criteria which together with mutual recognition of the competence of the export authorities would facilitate international trade. It was

suggested that the main paper could be issued as an FAO Technical Paper and that only the essential criteria be taken up by Codex.

122. The Committee recognized the usefullness of the broad technical paper prepared by the Consultant, and requested that it be redrafted taking into account the written comments and the comments made at the present session. The redrafted version would again be circulated to governments for comments and the matter would be considered at the Committee's next Session.

REVISION OF THE CODES OF PRACTICE FOR FISH AND FISHERY PRODUCTS (Agenda Item 13)

123. The Committee had for its consideration document CX/FFP 94/12, the summary report of a Working Group established at its last session to review the Codes of Practice for Fish and Fishery Products. The Working Group had been requested to incorporate into the revised Codes as much of the advisory information previously contained in Codex Standards as practicable and to introduce the aplication of the Hazard Analysis Critical Control Point (HACCP) System (ALINORM 83/18, para. 44). The Working Group (Canada, France, Germany, Iceland, Netherlands, United Kingdom and United States) had met in Ottawa, Canada, from 11-14 May 1993. The Committee also had before it the full report of the Working Group (Conference Room Document 1) which contained the full text of a Proposed Draft Revised Code of Practice for Frozen Fish based on CAC/RCP 16-1978, which was intended as a model for the revision of other Codes of Practice. The Report was introduced by the Delegation of Canada.

124. The Committee had previously agreed that provisions for commercial quality should be removed from the standards and incorporated into the codes, that these should follow the HACCP approach, taking into account the Guidelines for the Application of the HACCP System elaborated by the Committee on Food Hygiene. It was noted that besides the approach dealing with Critical Control Points for food safety purposes, a similar system of Control Points was proposed with respect to other mandatory provisions of the standards.

125. The Delegation of Canada drew the attention of the Committee to the HACCP flow diagram presented in Appendix II of CX/FFP 94/12. It also indicated that recall procedures needed to be referenced in the Codes to complete the HACCP approach. Section VI dealing with End Product Specifications which included the Essential Health and Hygiene Requirements had been expanded to include sections dealing with the essential final product requirements and optional quality specifications. A similar exercise had been carried out for the relevant sections of all other codes (Annex III).

126. Several delegations expressed their appreciation of the work achieved by the Delegation of Canada and the members of the Working Group, and the Committee welcomed the approach followed for the revision of the Codes. The Observer from the EC indicated that the Directive on Fish and Fishery Products required the industry to establish systems of control based on the HACCP principle, as defined in the Codex Guidelines, and that producers had the responsibility to define the Critical Control Points (CCPs) and control procedures in their specific manufacturing processes. The Chairman pointed out that the codes under consideration by the present session should be revised in the light of the principles followed for the Code for Frozen Fish, and noted that the comprehensive revision of all the codes would be a heavy task.

127. The Committee welcomed the offers of the following delegations to coordinate the revision of the current codes: Canada (Frozen Fish), France (Canned Fish), Mexico (Frozen Shrimps and Prawns), Netherlands (Molluscan Shellfish), United Kingdom and Ireland (Fresh Fish). Canada would also agree to examine the Code for Minced Fish in relation to the work on frozen fish. It was recommended that these revisions should incorporate all of the different Codes for specific products into generic or "group" Codes. The Chairman suggested that the combination of the Codes on Crustaceae into a single code might be considered and the Delegation of Brazil indicated its willingness to examine the Codes on Lobsters and

Crab in cooperation with the Delegation of Mexico. The Delegations of Denmark and Norway indicated their interest to undertake a similar task for other products, respectively Smoked Fish and Salted Fish. It was generally agreed that interested countries could contact the coordinating country for each code if their wished to participate in the process, and that this task should be carried out through cooperation between the different groups involved. The Committee noted that coordinating countries could hold working group sessions as required and that lead countries may need to meet to coordinate their efforts. Members of the Commission would be advised of the progress made in the revision process.

128. The Committee agreed that the Proposed Draft Revised Codes would be circulated at Step 3 for government comments prior to consideration by the next session of the Committee. The Committee noted that this procedure would be subject to the approval of the Executive Committee, which would be informed of the new work undertaken on the revision of the codes.

PROPOSED DRAFT AMENDMENT TO THE CODE OF PRACTICE FOR FRESH FISH TO INCLUDE FRESH FISH FILLETS (Agenda Item 12)

129. The Committee had for its consideration document CX/FFP 94/11, the Proposed Draft Amendment to include fresh fish fillets, and comments presented in CX/FFP 94/11-Add.1 (Canada) and CRD USA 1. The Delegation of the United Kingdom presented the revision, recalled that the last session of the Committee had decided to establish provisions for fresh fish, in view of a significant international trade, and had agreed that this issue should be addressed through an amendment to the Code of Practice for Fresh Fish, which would be elaborated by the United Kingdom and a group of other countries. The Delegation noted that the revision had been done with this specific purpose and that a HACCP approach would need to be incorporated; the Code should also be considered in conjunction with the provisions dealing with Modified Atmosphere Packaging in the relevant Code (see Agenda item 10).

130. The Chairman pointed out that the problems posed by trematode infection and outlined in the document CX/FFP 94/2-Add.1 (see para. 8, above) could be addressed through the HACCP system, and he noted that the elaboration of the codes under consideration by the present session should follow the same principles as the Code for Frozen Fish, as previously agreed. The Committee agreed to return to Step 3 the Code of Practice for Fresh Fish for redrafting, under the responsibility of the Delegation of United Kingdom, in order to incorporate the HACCP approach. The work undertaken in the Committee on Food Hygiene on the Proposed Draft Code for Refrigerated Packaged Foods with Extended Shelf Life should be taken into account in the process.

PROPOSED DRAFT CODE OF PRACTICE FOR THE FULL UTILIZATION OF SHARKS (Agenda item 14)

131. The Committee had before it FAO Fisheries Circular No. 844 containing the text of the Proposed Draft Code for the Full Utilization of Sharks as prepared by the FAO Fishery Industries Division. The Code had been prepared at the request of the 19th Session of the Committee and its further elaboration had been approved by the 19th Session of the Commission. Following discussion at the Committee's last Session (ALINORM 93/18, paras. 119-121), the Committee had requested comments on the Proposed Draft Code in Circular Letter CL 1992/17-FFP. Only one comment had been received (USA, Conference Room Document CRD USA 1).

132. The Committee noted the comments of the FAO Representative that the products covered by the Code were not of great significance to international trade and that many of them (e.g., hides) fell outside the Codex mandate. It was noted that the principal product of value in trade, shark fins, was covered by the Codex Standard for that product. The Delegation of Mexico supported the further development of the Code in view of the growing importance of the market for shark products. The Committee concurred with the opinion of the Delegation of Mexico that the practice of definning live sharks and returning them to the water was unsupportable.

133. In view of the general lack of support for the further development of the Code, the Committee decided to discontinue this work and to advise the Executive Committee accordingly. It was noted that the document could be further developed for the guidance of the shark industry by the FAO Fisheries Department. It was therefore agreed that Section 6.1 End-Product Specifications should be deleted.

PROPOSED DRAFT CODE OF PRACTICE FOR SURIMI (Agenda Item 15)

134. The Delegation of Japan introduced document CX/FFP 94/14 (Conference Room Document) containing a Proposed Draft Code of Practice for Frozen Surimi. It was noted that the document had been prepared following several reports made by Japan and the USA to the Committee and the Committee's decision at its last session to procede with the development of a Code of Practice (ALINORM 93/18, paras. 126-129).

135. The Committee expressed its appreciation for the work carried out by Japan and noted that the proposed draft was to be revised by the Delegation of Japan in consultation with that of the USA and that it would then be sent to governments for comments at Step 3 and considered in detail at its next Session.

136. The Committee noted that the matter of labelling and nomenclature of surimi-based and similar fish products had been referred to the Codex Committee on Food Labelling (see para. 75, above).

DEFINITION OF PREDATORY SPECIES OF FISH TO WHICH THE HIGHER LEVEL OF METHYL MERCURY APPLIES (Agenda Item 16)

137. The Committee had before it document CX/FFP 94/15, presenting a survey of current data on fish contamination by mercury prepared by FAO and a proposal for a single limit of 1 mg/kg, in view of the difficulties of establishing a satisfactory list and the variability of data within the same species, predatory or not. The Chairman recalled that guideline levels for methylmercury of 1 mg/kg for predatory fish and 0.5 mg/kg for non predatory fish had been adopted by the 19th Session of the Commission and that the Committee had been requested to establish corresponding list of species. This decision had been reexamined and confirmed by the 20th Session of the Commission and the Commmittee on Food Additives and Contaminants had agreed to retain these levels for methylmercury. The CCFAC had noted that an analysis of total mercury would be adequate to ensure that the level for methylmercury was not exceeded, and that an analysis of methylmercury would only be required when the level of total mercury exceed 1 mg/kg. The Delegation of Norway was of the opinion that total mercury examination should be used, as it was sufficient for inspection purposes.

138. The Committee recalled its previous discussions during the last session and, noting that the document provided a useful update of the data available, had an exchange of views on the opportunity of maintaining two distinct levels. In reply to a question on the destination of fish which were found to exceed the guideline levels, the Chairman drew the attention of the Committee to the Note to the text of the Guideline Levels indicating that this decision was under the responsibility of governments as regarded restrictions on consumption. It was also noted that appropriate Risk Management should be implemented on the basis of national consumption and exposure to contamination.

139. The Delegation of the United States expressed its position in favour of a single level of 1 mg/kg of methylmercury and its reservation on the definition of a list of predatory species as this was not the proper way to address the problem. Some delegations noted that it might prove difficult to agree on a list, as the species included might differ widely from one country to another. The Committee was however of the view that the levels should be set for total mercury especially for inspection purposes and it was agreed to inform the Committee on Food Additives and Contaminants of this conclusion.

140. The Committee agreed to follow the decision previously made with respect to the distinction of levels for predatory and non-predatory fish and to proceed with its work on the establishment of such lists. It was noted that a list had been established by the EC and that the Delegation of the United States

had proposed an extensive list to the last CCFFP session, as all predatory species should be covered on a world-wide basis. The Committee agreed that the Secretariat would combine the available lists into a common proposal and circulate it at Step 3 as a Proposed Draft Appendix to the Guideline Levels for Methylmercury in Fish (CAC/GL 7-1991). The Committee also agreed that Risk Management procedures should be followed and sampling plans based on the average level of mercury should be defined.

OTHER BUSINESS AND FUTURE WORK (Agenda item 17)

141. The Committee noted that its future work would include:

- Proposed Draft Revised Codes of Practice for the following groups of products (see para. 127):
  - Frozen Fish and Minced Fish (Canada)
  - Canned Fish (France)
  - Frozen Shrimps and Prawns with possible extension to other *Crustaceae* (Mexico)
  - Molluscan Shellfish (Netherlands)
  - Fresh Fish (United Kingdom/Ireland)
  - Salted Fish (Norway)
  - Smoked Fish (Denmark)
- Proposed Draft Code of Hygienic Practice for the Products of Aquaculture (FAO)
- Proposed Draft Code of Practice for Frozen Surimi (Japan, USA)
- Guidelines for the Sensory Evaluation of Fish and Shellfish (FAO, Codex Secretariat)
- Identification of Predatory Species of Fish to which the Higher Guideline Value for Mercury Applies.

The Committee also noted that it would need to consider the Proposed Draft Standards for Dried Anchovies and for fish Crackers initiated by the Codex Coordinating Committee for Asia.

DATE AND PLACE OF THE NEXT SESSION

142. The Committee was informed that its next Session would be held in about two years time (1996) at a date and place to be decided by the Host Government and Codex Secretariat, subject to confirmation by the Commission. It would most probably be held in Bergen.

SUMMARY STATUS OF WORK

Subject Matter	Step	Action by	Document Reference in ALINORM 95/18
Draft General Standard for Quick Frozen Fish Fillets	8	CAC Governments	para. 36 Appendix II
Draft Standard for Quick Frozen Raw Squid	8	CAC Governments	para. 45 Appendix III
Draft Revised Standards for: - Quick Frozen Blocks - Quick Frozen Finfish - Quick Frozen Lobsters - Quick frozen Fish Sticks - Quick Frozen Shrimps or Prawns	8	CAC Governments	para. 100 Appendix IV Appendix V Appendix VI Appendix VII Appendix VIII
Draft Revised Standards for: - Canned Crab Meat - Canned Finfish - Canned Salmon - Canned Sardines and Sardine-type Products - Canned Shrimps and Prawns - Canned Tuna and Bonito	8	CAC Governments	Appendix IX Appendix X Appendix XI Appendix XII Appendix XIII Appendix XIV
Draft Revised Standard for Salted Fish and Dried Salted Fish of the Gadidae	8	CAC Governments	para. 108 Appendix XV
Code of Practice for the Products of Aquaculture	3	FAO Governments 22nd CCFFP	para. 116
Code of Practice for Frozen Surimi	3	Japan/USA 22nd CCFFP	para. 135
Revision of the Codes of Practice: - Frozen Fish - Canned Fish - Frozen Shrimps and Prawns - Molluscan Shellfish - Fresh Fish - Salted Fish - Smoked Fish	3	Canada France Mexico Netherlands UK/Ireland Norway Denmark 22nd CCFFP	para. 127
Guidelines on the Sensory Evaluation of Fish and Shellfish	3	Secretariat 22nd CCFFP	para. 122
List of Predatory Species to which the higher level of methylmercury applies	3	Secretariat 22nd CCFFP	para. 140

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APPENDIX II

DRAFT GENERAL STANDARD FOR QUICK FROZEN FISH FILLETS
(At Step 8 of the Procedure)

1. SCOPE

This standard applies to quick frozen fillets of fish as defined below and offered for direct consumption without further processing. It does not apply to products indicated as intended for further processing or for other industrial purposes.

2. DESCRIPTION

2.1 Product Definition

Quick frozen fillets are slices of fish of irregular size and shape which are removed from the carcass of the same species of fish suitable for human consumption by cuts made parallel to the backbone and sections of such fillets cut so as to facilitate packing, and processed in accordance with the process definitions given in Section 2.2.

2.2 Process Definition

The product after any suitable preparation shall be subjected to a freezing process and shall comply with the conditions laid down hereafter. The freezing process shall be carried out in appropriate equipment in such a way that the range of temperature of maximum crystallization is passed quickly. The quick freezing process shall not be regarded as complete unless and until the product temperature has reached -18°C (0°F) or colder at the thermal centre after thermal stabilization. The product shall be kept deep frozen so as to maintain the quality during transportation, storage and distribution.

These products shall be processed and packaged so as to minimize dehydration and oxidation.

The recognized practice of repacking quick frozen products under controlled conditions which will maintain the quality of the product, followed by the reapplication of the quick freezing process as defined, is permitted.

2.3 Presentation

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

(a) meets all requirements of this standard, and

(b) is adequately described on the label to avoid confusing or misleading the consumer.

2.3.2 Fillets may be presented as boneless, provided that boning has been completed including the removal of pin-bones.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Fish

Quick frozen fish fillets shall be prepared from sound fish which are of a quality fit to be sold fresh for human consumption.

3.2 **Glazing**

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.

3.3 **Other Ingredients**

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

3.4 **Decomposition**

The products shall not contain more than 10 mg/100 g of histamine based on the average of the sample unit tested. This shall apply only to species of *Clupeidae, Scombridae, Scombresocidae, Pomatomidae* and *Coryphaenedae* families.

3.5 **Final Product**

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

4. **FOOD ADDITIVES**

Additive	Maximum level in the final product
Moisture/Water - Retention Agents	
- Monophosphate, monosodium or monopotassium (Monosodium or Monopotassium orthophosphate) - Diphosphate, tetrasodium or tetrapotassium (Na or K pyrophosphate) - Triphoshate, pentasodium or pentapotassium) or calcium (Na, K or Ca tripolyphosphate)	10 g/kg expressed as P_2O_5, singly or in combination (includes natural Phosphate)
- Polyphosphate, sodium (Na hexametaphosphate)	(naturally present)
- Sodium alginate	5 g/kg
Antioxidant	
- Ascorbate, sodium or potassium salts	1 g/kg expressed as ascorbic acid

5. **HYGIENE AND HANDLING**

5.1. The final product shall be free from any foreign material, that poses a threat to human health.

5.2. When tested by appropriate methods of sampling and examination prescribed by Codex Alimentarius Commission (CAC), the product:

(i) shall be free from microorganisms or substances originating from microorganisms in amounts which may represent a hazard to health in accordance with standards established by the CAC, and

(ii) shall not contain histamine that exceeds 20 mg/100 g in any sample unit. This applies only to species of *Clupeidae, Scombridae, Scombresocidae, Pomatomidae* and *Coryphaenedae* families.

(iii) shall be free from any other substance in amounts which may represent a hazard to health in accordance with standards established by the CAC.

5.3. It is recommended that the product covered by the provisions of this standard be prepared and handled in accordance with the following Codes:

(i) the appropriate sections of the Recommended International Code of Practice - General Principles of Food Hygiene (CAC/RCP 1-1985, Rev.2);

(ii) the Recommended International Code of Practice for Frozen Fish (CAC/RCP 16-1978);

(iii) The Recommended International Code of Practice for the Processing and Handling of Quick Frozen Foods (CAC/RCP 8-1976);

(iv) The Draft International Code of Hygienic Practice for the Products of Aquaculture (under elaboration, 1994).

6. LABELLING

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

6.1 Name of the Food

6.1.1 The name of the product as declared on the label shall be "... fillets" or "fillets of..." according to the law, custom or practice in the country in which the product is to be distributed.

6.1.2 There shall appear on the label reference to the form of presentation in close proximity to the name of the food in such additional words or phrases that will avoid misleading or confusing the consumer.

6.1.3 The term "quick frozen", shall also appear on the label, except that the term "frozen" may be applied in countries where this term is customarily used for describing the product processed in accordance with subsection 2.2 of this standard.

6.1.4 The label shall state that the product should be maintained under conditions that will maintain the quality during transportation, storage and distribution.

6.1.5 If the product has been glazed with sea-water, a statement to this effect shall be made.

6.2 Net Contents (Glazed Products)

Where the food has been glazed the declaration of net contents of the food shall be exclusive of the glaze.

6.3 Storage Instructions

The label shall include terms to indicate that the product shall be stored at a temperature of -18°C or colder.

6.4 Labelling of Non-retail Containers

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

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

7. SAMPLING, EXAMINATION AND ANALYSES

7.1 Sampling

(i) Sampling of lots for examination of the product shall be in accordance with the FAO/WHO Codex Alimentarius Sampling Plans for Prepackaged Foods (AQL-6.5) CAC/RM 42-1977. A sample unit is the primary container or for individually quick frozen products is at least a 1 kg portion of the sample unit.

(ii) Sampling of lots for examination of net weight 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 procedures elaborated in Sections 7.3 through 7.6, Annex A and the "Code of Practice for the Sensory Evaluation of Fish and Shellfish" (under elaboration).

7.3 Determination of Net Weight

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

7.3.2 Determination of Net Weight of Products Covered by Glaze

As soon as the package is removed from low temperature storage, open immediately and place the contents under a gentle spray of cold water. Agitate carefully so that the product is not broken. Spray until all ice glaze that can be seen or felt is removed. Remove adhering water by the use of paper towel and weight the product in a tared pan.

7.4 Procedure for the Detection of Parasites (Type 1 Method) in skinless fillets

The entire sample unit is examined non-destructively by placing appropriate portions of the thawed sample unit on a 5 mm thick acryl sheet with 45% translucency and candled with a light source giving 1500 lux 30 cm above the sheet.

7.5 Determination of Gelatinous Condition

According to the AOAC Methods - "Moisture in Meat and Meat Products, Preparation of Sample Procedure"; 983.18 and "Moisture in Meat" (Method A); 950.46; AOAC 1990.

7.6 Cooking Methods

The following procedures are based on heating the product to an internal temperature of 65 - 70°C. The product must not be overcooked. Cooking times vary according to the size of the product and the temperatures used. The exact times and conditions of cooking for the products should be determined by prior experimentation.

Baking Procedure: Wrap the product in aluminum foil and place it evenly on a flat cookie sheet or shallow flat pan.

Steaming Procedure: Wrap the product in aluminum foil and place it on a wire rack suspended over boiling water in a covered container.

Boil-in-Bag Procedure: Place the product in a boilable film-type pouch and seal. Immerse the pouch in boiling water and cook.

Microwave Procedure: Enclose the product in a container suitable for microwave cooking. If plastic bags are used, check to ensure that no odour is imparted from the plastic bags. Cook according to equipment instructions.

7.7 Determination of Histamine

AOAC 977.13 (15th Edition, 1990)[1]

8. DEFINITION OF DEFECTIVES

A sample unit shall be considered as defective when it exhibits properties defined below:

8.1 Dehydration

Greater than 10% of the surface area of the sample unit or for pack sizes described below, exhibits excessive loss of moisture clearly shown as white or yellow abnormality 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 product.

Pack Size	Defect Area
a) ≤ 200 g units	≥ 25 cm^2
b) 201 - 500 g units	≥ 50 cm^2
c) 501 - 5000 g units	≥ 150 cm^2

8.2 Foreign Matter

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

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[1]Subject to endorsement by the Codex Committee on Methods of Analysis and Sampling.

8.3 Parasites

The presence of two or more parasites per kg of the sample unit detected by the method described in 7.4 with a capsular diameter greater than 3 mm or a parasite not encapsulated and greater than 10 mm in length.

8.4 Bones (In packs designated boneless)

More than one bone per kg of product greater or equal to 10 mm in length, or greater or equal to 1 mm in diameter; a bone less than or equal to 5 mm in length, is not considered a defect if its diameter is not more than 2 mm. The foot of a bone (where it has been attached to the vertebra) shall be disregarded if its width is less than or equal to 2 mm, or if it can easily be stripped off with a fingernail.

8.5 Odour and Flavour

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

8.6 Flesh abnormalities

A sample unit affected by excessive gelatinous condition of the flesh together with greater than 86% moisture found in any individual fillet or a sample unit with pasty texture resulting from parasitic infestation affecting more than 5% of the sample unit by weight.

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 in the Sampling Plans for Prepackaged Foods (AQL-6.5) - (CAC/RM 42-1977);

(ii) the average net contents of all containers examined is not less than the declared weight, provided there is no unreasonable shortage in any containers;

(iii) the Food Additives, Hygiene and Handling and the Labelling requirements of Sections 3.4, 4, 5.1 and 5.2 and 6 are met.

"ANNEX A"

SENSORY AND PHYSICAL EXAMINATION

1. Complete net weight determination, according to defined procedures in Section 7.3 (de-glaze as required).

2. Examine the frozen fillets for the presence of dehydration by measuring those areas which can only be removed with a knife or other sharp instrument. Measure the total surface area of the sample unit, and calculate the percentage affected.

3. Thaw and individually examine each fillet in the sample unit for the presence of foreign matter, parasites, bone where applicable, odour, and flesh abnormality defects.

4. In cases where a final decision on odour cannot be made in the thawed uncooked sate, a small portion of the disputed material (approximately 200 g) is sectioned from the sample unit and the odour and flavour confirmed without delay by using one of the cooking methods defined in Section 7.6.

5. In cases where a final decision on gelatinous condition cannot be made in the thawed uncooked state, the disputed material is sectioned from the product and gelatinous condition confirmed by cooking as defined in Section 7.6 or by using the procedure in Section 7.5 to determine if greater than 86% moisture is present in any fillet. If a cooking evaluation is inconclusive, then the procedure in 7.5 would be used to make the exact determination of moisture content.

APPENDIX III

DRAFT STANDARD FOR QUICK FROZEN RAW SQUID
(At Step 8 of the Procedure)

1. SCOPE

This standard applies to quick frozen raw squid and parts of raw squid, as defined below and offered for direct consumption without further processing. It does not apply to products indicated as intended for further processing or for other industrial purpose.

2. DESCRIPTION

2.1 Product Definition

Quick frozen squid and parts of squid are obtained from squid species of the following families:

(i) *Loliginidae*
(ii) *Ommastrephidae.*

2.2 Process Definition

The product after any suitable preparation shall be subjected to a freezing process and shall comply with the conditions laid down hereafter. The freezing process shall be carried out in appropriate equipment in such a way that the range of temperature of maximum 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 so as to maintain the quality during transportation, storage and distribution.

Industrial repacking of intermediate quick frozen material under controlled conditions which maintain the quality of the product, followed by the reapplication of the quick freezing process as defined above is permitted.

Quick frozen squid and parts of squid shall be processed and packaged so as to minimize dehydration and oxidation.

2.3 Presentation

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

(i) meets all the requirements of this standard, and

(ii) is adequately described on the label to avoid confusing or misleading the consumer.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Squid

Quick frozen squid shall be prepared from sound squid which are of a quality fit to be sold fresh for human consumption.

3.2 Glazing

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.

3.3 Final Product

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

4. FOOD ADDITIVES

No food additives are permitted in these products.

5. HYGIENE AND HANDLING

5.1 The final product shall be free from any foreign material that poses a threat to human health.

5.2 When tested by appropriate methods of sampling and examination prescribed by the Codex Alimentarius Commission (CAC), the product:

(i) shall be free from microorganisms or substances originating from microorganisms in amounts which may present a hazard to health in accordance with standards established by the CAC; and

(ii) shall not contain any other substance in amounts which may present a hazard to health in accordance with standards established by the CAC.

5.3 It is recommended that the product covered by the provisions of this standard be prepared and handled in accordance with the following Codes:

(i) the appropriate sections of the Recommended International Code of Practice - General Principles of Food Hygiene (CAC/RCP 1-1985, Rev. 2);

(ii) the Recommended International Code of Practice for Frozen Fish (CAC/RCP 16-1978);

(iii) The Recommended International Code of Practice for the Processing and Handling of Quick Frozen Foods (CAC/RCP 8-1976);

(iv) the Recommended International Code of Practice for Cephalopods (CAC/RCP 37-1989).

6. LABELLING

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

6.1 The Name of The Food

6.1.1 The name of the product shall be "squid", or another name according to the law, custom or practice in the country in which the product is to be distributed.

6.1.2 There shall appear on the label reference to the presentation, in close proximity to the name of the food in such additional words or phrases that will avoid misleading or confusing the consumer.

6.1.3 In addition, the labelling shall show the term "frozen", or "quick frozen" whichever is customarily used in the country in which the product is distributed, to describe a product subjected to the freezing process described in sub-section 2.2.

6.1.4 The label shall state that the product should be maintained under conditions that will maintain the quality during transportation, storage and distribution.

6.1.5 If the product has been glazed with sea-water, a statement to this effect shall be made.

6.2 Net Contents (Glazed Products)

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

6.3 Storage Instructions

The label shall include terms to indicate that the product shall be stored at a temperature of -18°C or colder.

6.4 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.

7. SAMPLING, EXAMINATION AND ANALYSES

7.1 Sampling

7.1.1 Sampling of lots for examination of the product shall be in accordance with the FAO/WHO Codex Alimentarius Sampling Plans for Prepackaged Foods (AQL- 6.5) CAC/RM 42-1977. Sampling of lots composed of blocks shall be in accordance with the sampling plan developed for quick frozen fish blocks (reference to be provided). The sample unit is the primary container or for individually quick frozen products is at least 1 kg portion of the sample unit.

7.1.2 Sampling of lots for examination of net weight 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 procedures elaborated in Sections 7.3 through 7.5, Annex A and the Code of Practice for the Sensory Evaluation of Fish ans Shellfish (under development).

7.3 Determination of Net Weight

7.3.1 Determination of Net Weight of Product 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.

7.3.2 Determination of Net Weight of Products Covered by Glaze
(to be elaborated)

7.4 Procedure for Thawing

The sample unit is thawed by enclosing it in a film-type bag and immersing in water at room temperature (not higher than 35°C). The complete thawing of the product is determined by gently squeezing the bag occasionally so as not to damage the texture of the squid until no hard core of ice crystals are left.

7.5 Cooking Methods

The following procedures are based on heating the product to an internal temperature of 65-70°C. Cooking times vary according to the size of the product and the temperatures used. The exact times and conditions of cooking for the product should be determined by prior experimentation.

Baking Procedure: Wrap the product in aluminum foil and place it evenly on a flat cookie sheet or shallow flat pan.

Steaming Procedure: Wrap the product in aluminum foil and place it on a wire rack suspended over boiling water in a covered container.

Boil-In-Bag Procedure: Place the product into a boilable film-type pouch and seal. Immerse the pouch into boiling water and cook.

Microwave Procedure: Enclose the product in a container suitable for microwave cooking. If plastic bags are used, check to ensure that no odour is imparted from the plastic bags. Cook according to equipment instructions.

8. DEFINTION OF DEFECTIVES

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

8.1 Deep Dehydration

Greater than 10% of the surface area of the sample unit exhibits excessive loss of moisture clearly shown as white or yellow abnormality 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 squid.

8.2 Foreign Matter

The presence in the sample unit of any matter which has not been derived from squid (excluding packing material), 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.

8.3 Odour and Flavour

A sample unit affected by persistent and distinct objectional odours or flavours indicative of decomposition, which may be characterized also by light pinkish to red colour.

8.5 Texture

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

9. 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 8 does not exceed the acceptance number (c) of the appropriate sampling plan in the Sampling plans for Prepackaged Foods (AQL-6.5) (CAC/RM 42-1977);

(ii) the average net weight of all sample units is not less than the declared weight, provided there is no unreasonable shortage in any container;

(iii) the Food Additives, Hygiene and Labelling requirements of Sections 4, 5.1, 5.2 and 6 are met.

"ANNEX A"

SENSORY AND PHYSICAL EXAMINATION

1. Complete net weight determination, according to defined procedures in Section 7.3 (de-glaze as required).

2. Examine the frozen squid for the presence of deep dehydration by measuring those areas which can only be removed with a knife or other sharp instrument. Measure the total surface area of the sample unit, and determine the percentage affected using the following formula;

$$\frac{\text{area affected}}{\text{total surface area}} \times 100\% = \%\ \text{affected by deep dehydration}$$

3. Thaw and individually examine each squid in the sample unit for the presence of foreign matter and colour.

4. Examine each squid using the criteria outlined in Section 8. Flesh odours are examined by making a cut parallel to the surface of the flesh so that the exposed surface can be evaluated.

5. In cases where a final decision on odour and texture can not be made in the thawed uncooked state, a portion of the sample unit is sectioned off and the odour, flavour and texture confirmed without delay by using one of the cooking methods defined in Section 7.5.

APPENDIX IV

DRAFT REVISED STANDARD FOR QUICK FROZEN BLOCKS OF FISH FILLET, MINCED FISH FLESH AND MIXTURES OF FILLETS AND MINCED FISH FLESH
(CODEX STAN. 165-1989)
(At Step 8 of the Procedure)

1. SCOPE

This standard applies to quick frozen blocks of cohering fish flesh, prepared from fillets[2] or minced fish flesh or a mixture of fillets and minced fish flesh, which are intended for further processing.

2. DESCRIPTION

2.1 Product Definition

Quick frozen blocks are rectangular or other uniformly shaped masses of cohering fish fillets, minced fish or a mixture thereof, which are suitable for human consumption, comprising:

(i) a single species; or
(ii) a mixture of species with similar sensory characteristics.

2.1.1 Fillets are slices of fish of irregular size and shape which are removed from the carcass by cuts made parallel to the back bone and pieces of such fillets, with or without the skin.

2.1.2 Minced fish flesh used in the manufacture of blocks are particles of skeletal muscle which have been separated from and are essentially free from bones, viscera and skin.

2.2 Process Definition

The product after any suitable preparation shall be subjected to a freezing process and shall comply with the conditions laid down hereafter. The freezing process shall be carried out in appropriate equipment in such a way that the range of temperature of maximum 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 so as to maintain the quality during transportation, storage and distribution.

Industrial repacking or further processing of intermediate quick frozen material under controlled conditions which maintain the quality of the product followed by the reapplication of the quick freezing process is permitted.

These products shall be processed and packaged so as to minimize dehydration and oxidation.

2.3 Presentation

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

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2 Including pieces of fillets.

2.3.1 meets all requirements of this standard, and

2.3.2 is adequately described on the label to avoid confusing or misleading the consumer.

2.3.3 Blocks may be presented as boneless, provided that boning has been completed including the removal of pin-bones.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Fish

Quick frozen blocks shall be prepared from fillets or minced flesh of sound fish which are of a quality fit to be sold fresh for human consumption.

3.2 Glazing

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.

3.3 Other Ingredients

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

3.4 Decomposition

The products shall not contain more than 10 mg/100 g of histamine based on the average of the sample unit tested. This shall apply only to species of *Clupeidae, Scombridae, Scombresocidae, Pomatomidae* and *Coryphaenedae* families.

3.5 Final Product

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

4. FOOD ADDITIVES

Only the use of the following additives is permitted.

4.1 Moisture/Water Retention Agents

	Maximum Level in the final product
Monophosphate, monosodium or monopotassium (Monosodium or Monopotassium Orthophosphate Diphosphate, tetrasodium or tetrapotassium (Na, K, or Ca tripolyphosphate) Triphosphate, pentasodium or calcium (Na, K or Ca tripolyphosphate Polyphosphate, sodium (Na hexametaphosphate)	10g/kg expressed As P_2O_5, singly or in combination (includes natural phosphate)

Sodium alginate	5g/kg

4.2 **Antioxidants**

Ascorbic acid or its sodium or potassium salts Ascorbyl palmitate	1g/kg, expressed as ascorbic acid, singly or in combination

In addition, for Minced Fish Flesh only:

Citric acid or its sodium or potassium salts	1g/kg, expressed as citric acid, singly or in combination

4.3 **Thickeners**

Guar gum Carob bean (locust bean) gum Pectins Carboxymethyl cellulose, sodium salt Xanthan gum Carrageenan Methyl Cellulose	5g/kg singly or in combination

5. HYGIENE AND HANDLING

5.1 The final product shall be free from any foreign material that poses a threat to human health.

5.2 When tested by appropriate methods of sampling and examination prescribed by the Codex Alimentarius Commission (CAC), the product:

(i) shall be free from microorganisms or substances originating from microorganisms in amounts which may represent a hazard to health in accordance with standards established by the CAC; and

(ii) shall not contain histamine that exceeds 20 mg/100 g in any sample unit. This applies only to species of *Clupeidae, Scombridae, Scombresocidae, Pomatomidae* and *Coryphaenedae* families.

(iii) shall not contain any other substances in amounts which may represent a hazard to health in accordance with standards established by the CAC.

5.3 It is recommended that the product covered by the provisions of this standard be prepared and handled in accordance with the following Codes:

(i) the appropriate sections of the Recommended International Code of Practice - General Principles of Food Hygiene (CAC/RCP 1-1985, Rev. 2);

(ii) the Recommended International Code of Practice for Frozen Fish (CAC/RCP 16-1978);

(iii) the Recommended International Code of Practice for Minced Fish Prepared By Mechanical Separation (CAC/RCP 27-1983).

(iv) the Recommended International Code of Practice for the Processing and Handling of Quick Frozen Foods (CAC/RCP 8-1976)

(v) the Draft International Code of Hygienic Practice for the Products of Aquaculture (under laboration, 1994)

6. LABELLING

In addition to the provisions of the Codex General Standard for the Labelling of Prepackaged Foods (CODEX STAN 1-1985) the following specific provisions apply;

6.1 The Name of The Food

6.1.1 The name of the food shall be declared as "x y blocks" in accordance with the law, custom or practice of the country in which the product is distributed, where "x" shall represent the common name(s) of the species packed and "y" shall represent the form of presentation of the block (see Section 2.3).

6.1.2 If the product has been glazed with sea-water, at statement to this effect shall be made

6.1.3 The name "quick frozen", shall also appear on the label, except that the term "frozen" may be applied in countries where this term is customarily used for describing the product processed in accordance with subsection 2.2 of this standard.

6.1.4 The proportion of mince in excess of 10% of net fish content shall be declared stating the percentage ranges: 10-25, >25-35, etc. Blocks with more than 90% mince are regarded as mince blocks.

6.1.5 The label shall state that the product should be maintained under conditions that will maintain the quality during transportation, storage and distribution.

6.2 Net Contents (Glazed Blocks)

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

6.3 Storage Instructions

The label shall include terms to indicate that the product shall be stored at a temperature of -18°C or colder.

6.4 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 product, lot identification, and the name and address of the manufacturer or packer as well as storage instructions, shall appear on the container.

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

7. SAMPLING, EXAMINATION AND ANALYSES

7.1 Sampling Plan for Fish Blocks

(i) Sampling of lots for examination of the product shall be in accordance with the sampling plan defined below. The sample unit is the entire block.

Lot Size (Number of blocks)	Sample Size (Number of blocks to be tested) (n)	Acceptance Number (c)
< 15	2	0
16 - 50	3	0
51 - 150	5	1
151 - 500	8	1
501 - 3200	13	2
3201 - 35000	20	3
> 35000	32	5

If the number of defective blocks in the sample is less than or equal to c, accept the lot; otherwise, reject the lot.

(ii) Sampling of lots for examination of net weight shall be carried out in accordance with an appropriate sampling plan meeting the established 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 procedures elaborated in Sections 7.3 through 7.7 and Annex A and in accordance with the Code of Practice for the Sensory Evaluation of Fish and Shellfish (under development).

7.3 Determination of Net Weight

7.3.1 Determination of Net Weight of Product 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.

7.3.2 Determination of Net Weight of Products Covered by Glaze

As soon as the package is removed from frozen temperature storage, open immediately and place the contents under a gentle spray of cold water until all ice glaze that can be seen or felt is removed. Remove adhering water by the use of paper towel and weigh the product.

An alternate method is outlined in Annex B.

7.4 Procedure for the Detection of Parasites for skinless blocks of fish fillets (Type I method)

The entire sample unit is examined non-destructively by placing appropriate portions of the thawed sample unit on a 5 mm thick acryl sheet with 45% translucency and candled with a light source giving 1500 lux 30 cm above the sheet.

7.5 Determination of Proportions of Fillet and Minced Fish in Quick Frozen Blocks prepared from Mixtures of Fillets and Minced Fish [1] [2]

According to the AOAC Method - "Physical Separation of Fillets and Minced Fish", AOAC 1988, 71, 206 (Type II).

7.6 Determination of Gelatinous Condition

According to the AOAC Methods - "Moisture in Meat and Meat Products, Preparation of Sample Procedure"; AOAC 1990, 983.18 and "Moisture in Meat" Method A, 950.46; AOAC 1990.

7.7 Cooking Methods

The following procedures are based on heating the product to an internal temperature of 65 - 70°C. The product must not be overcooked. Cooking times vary according to the size of the product and the temperatures used. The exact times and conditions of cooking for the products should be determined by prior experimentation.

Baking Procedure: Wrap the product in aluminum foil and place it evenly on a flat cookie sheet or shallow flat pan.

Steaming Procedure: Wrap the product in aluminum foil and place it on a wire rack suspended over boiling water in a covered container.

Boil-In-Bag Procedure: Place the product into a boilable film-type pouch and seal. Immerse the pouch into boiling water and cook.

Microwave Procedure: Enclose the product in a container suitable for microwave cooking. If plastic bags are used, check to ensure that no odour is imparted from the plastic bags. Cook according to equipment instructions.

7.8. Thawing Procedure for Quick Frozen Blocks

Air Thaw Method:

Frozen fish blocks are removed from the packaging. The frozen fish blocks are individually placed into snug fitting impermeable plastic bags or a humidity controlled environment with a relative humidity of at least 80%. Remove as much air as possible from the bags and seal. The frozen fish blocks sealed in plastic bags are placed on individual trays and thawed at air temperature of 25°C (77°F) or lower. Thawing is completed when the product can be readily separated without tearing. Internal block temperature should not exceed 7°C (45°F).

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1 This method has been evaluated for cod only but, in principle, should be appropriate to other fish species or mixed species.

2 This method is accurate for levels of mince greater than 10%.

Water Immersion Method:

Frozen fish blocks are removed from the packaging. The frozen fish blocks are individually placed into impermeable plastic bags. Remove as much air as possible from the bags and seal. The frozen fish blocks are placed into a circulating water bath with temperatures maintained at 21°C ± 1.5°C (69.8°F ± 3.7°F). Thawing is completed when the product can be easily separated without tearing. Internal block temperature should not exceed 7°C (45°F).

7.9 **Determination of histamine**

AOAC 977.13 (15th Edition, 1990)[3]

8. **DEFINITION OF DEFECTIVES**

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

8.1 **Deep Dehydration**

Greater than 10% of the surface area of the sample unit exhibits excessive loss of moisture clearly shown as white or yellow abnormality 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 block.

8.2 **Foreign Matter**

The presence in the sample unit of any matter which has not been derived from fish (excluding packing material), 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.

8.3 **Parasites**

The presence of two or more parasites per kg of the sample unit detected by a method described in 7.4 with a capsular diameter greater than 3 mm or a parasite not encapsulated and greater than 10 mm in length.

8.4 **Bones** (in packs designated boneless)

More than one bone per kg of product greater or equal to 10mm in length, or greater or equal to 1 mm in diameter; a bone less than or equal to 5 mm in length, is not considered a defect if its diameter is not more than 2 mm. The foot of a bone (where it has been attached to the vertebra) shall be disregarded if its width is less than or equal to 2 mm, or if it can easily be stripped off with a fingernail.

8.5 **Odour and Flavour**

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

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3 Subject to endorsement by the Codex Committee on Methods of Analysis and Sampling

8.6 Flesh abnormalities

A sample unit affected by excessive gelatinous condition of the flesh together with greater than 86% moisture found in any individual fillet, or a sample unit with pasty texture resulting from parasitic infestation affecting more than 5% of the sample unit by weight.

9. LOT ACCEPTANCE

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

(i) the total number of defective sample units as classified according to Section 8 does not exceed the acceptance number (c) of the sampling plan in Section 7; and

(ii) the average net weight of all sample units is not less than the declared weight, provided there is no unreasonable shortage in any container; and

(iii) the Food Additives, Hygiene and Labelling requirements of Sections 3.4, 4, 5.1, 5.2 and 6 are met.

"ANNEX A"

SENSORY AND PHYSICAL EXAMINATION

1. Complete net weight determination, according to defined procedures in Section 7.3 (de-glaze as required).

2. Examine the frozen block for the presence of dehydration by measuring those areas which can only be removed with a knife or other sharp instrument. Measure the total surface area of the sample unit, and calculate the percentage affected.

3. Thaw and individually examine each block in the sample unit for the presence of foreign matter, bone where applicable, odour, and textural defects.

4. In cases where a final decision on odour can not be made in the thawed uncooked sate, a small portion of the disputed material (approximately 200 g) is sectioned from the block and the odour and flavour confirmed without delay by using one of the cooking methods defined in Section 7.8.

5. In cases where a final decision on gelatinous condition cannot be made in the thawed uncooked state, the disputed material is sectioned from the block and the gelatinous condition confirmed by cooking as defined in Section 7.7. or by using procedure in Section 7.6. to determine if greater than 86% moisture is present in any fillet. If cooking evaluation is inconclusive, then procedure in 7.6. would be used to make the exact determination of moisture content.

ANNEX B

METHOD FOR THE DETERMINATION OF NET CONTENT OF FROZEN FISH BLOCKS COVERED BY GLAZE

Glazing is not used for Q.F. blocks of white fish. Only Q.F. blocks of herring, mackerel and other brown (fat) fish are glazed, which are destined for further processing (canning, smoking). For such blocks the following procedure may be applicable (tested with block frozen shrimps).

1. **Principle:**

The pre-weighed glazed sample is immersed into a water bath by hand till all glaze is removed (as felt by fingers). As soon as the surface becomes rough, the still frozen sample is removed from the water bath and dried by use of a paper towel before estimating the net product content by repeated weighing. By this procedure thaw drip losses and/or re-freezing of adhering moisture can be avoided.

2. **Equipment:**

- Balance - sensitive to 1 g
- Water bath, preferably with adjustable temperature
- Circular sieve with a diameter of 20 cm and 1-3 mm mesh apertures (ISO R 565)
- Paper or cloth towels with smooth surface
- A freezed box should be available at the working place

3. **Preparation of samples and water bath:**

- The product temperature should be adjusted to -18/-20°C to achieve standard deglazing conditions (especially necessary if a standard deglazing period shall be defined in case of regular shaped products).

- After sampling from the low temperature store remove, if present, external ice crystals or snow from the package with the frozen product.

- The water bath shall contain an amount of fresh potable water equal to about 10 times of the declared weight of the product; the temperature should be adjusted on about 15°C to 35°C.

4. **Determination of gross-weight "A":**

After removal of the package, the weight of the glazed product is determined: In case of single fish fillets, single weights are recorded (A 1-A n). The weighed samples are placed intermediately into the freezer box.

5. **Removal of glaze:**

The pre-weighed samples/sub-samples are transferred into the water bath and kept immersed by hand. The product may be carefully agitated, till no more glaze can be felt by the finger-tips on the surface of the product: change from slippery to rough. Needed time, depending on size/shape and glaze content of the product, 10 to 60 sec. (and more in case of higher glaze contents or if frozen together).

For block-frozen products in consumer packs (also for single glaze products, which are frozen together during storage) the following (preliminary) procedure may be applicable: The pre-weighed block or portion is transferred onto a suitable sized sieve and immersed into the water bath. By slight pressure of the fingers separating deglazed portions are removed fractionally. Short immersing is repeated, if glaze residues are still present.

6. Determination of net weight "B"

The deglazed sample/sub-sample, after removal of adhering water by use of a towel (without pressure) is immediately weighed. Single net-weights of sub-samples are summed up: B_{1-n}.

7. Determination of glaze-weight "C"

Gross-weight "A" - Net-weight "B" = Glaze-weight "C"

8. Calculation of percentage proportions:

% net content of the product $"F" = \frac{"B"}{"A"} \times 100$

% glaze - related to the gross weight of product $"G" = \frac{"C"}{"A"} \times 100$

% glaze - related to the net weight of product $"H" = \frac{"C"}{"B"} \times 100$

APPENDIX V

DRAFT REVISED STANDARD FOR QUICK FROZEN FINFISH, UNEVISCERATED AND EVISCERATED

(CODEX STAN. 36-1981)

(At to Step 8 of the Procedure)

1. SCOPE

This standard shall apply to frozen finfish uneviscerated and eviscerated[1].

2. DESCRIPTION

2.1 Product Definition

Frozen finfish suitable for human consumption, with or without the head, from which the viscera or other organs may have been completely or partially removed.

2.2 Process Definition

The product, after any suitable preparation, shall be subjected to a freezing process and shall comply with the conditions laid down hereafter. The freezing process shall be carried out in appropriate equipment in such a way that the range of temperature of maximum 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 so as to maintain the quality during transportation, storage and distribution.

Industrial repacking of quick frozen products under controlled conditions which maintain the quality of the products followed by the reapplication of the quick freezing process is permitted.

Quick frozen finfish, shall be processed and packaged so as to minimize dehydration and oxidation.

2.3 Presentation

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

2.3.1 meets all requirements of this standard; and

2.3.2 is adequately described on the label to avoid confusing or misleading the consumer.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Fish

Quick frozen finfish shall be prepared from sound fish which are of a quality fit to be sold fresh for human consumption.

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1 It does not apply to fish frozen in brine intended for further processing.

3.2 Glazing

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.

3.3 Other Ingredients

All other ingredients used shall be of food grade quality and conform to all applicable Codex and WHO standards.

3.4. Decomposition

The products shall not contain more than 10 mg/100 g of histamine based on the average of the sample unit tested. This shall apply only to species of *Clupeidae, Scombridae, Scombresocidae, Pomatomidae* and *Coryphaenedae* families.

3.5 Final Product

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

4. FOOD ADDITIVES

Only the use of the following additives is permitted.

Additive	Maximum Level in the final product
Antioxidant	
Ascorbic acid Ascorbate, sodium or potassium salts	1 g/kg expressed as Ascorbic acid

5. HYGIENE AND HANDLING

5.1 The final product shall be free from any foreign material, that poses a threat to human health.

5.2 When tested by appropriate methods of sampling and examination prescribed by the Codex Alimentarius Commission (CAC), the product:

(i) shall be free from microorganisms or substances originating from microorganisms in amounts which may present a hazard to health in accordance with standards established by the CAC; and

(ii) shall not contain histamine that exceeds 20 mg/100 g. This applies only to species of *Clupeidae, Scombridae, Scombresocidae, Pomatomidae* and *Coryphaenedae* families.

(iii) shall not contain any other substance in amounts which may present a hazard to health in accordance with standards established by the CAC.

5.3 It is recommended that the product covered by the provisions of this standard be prepared and handled in accordance with the following Codes:

(i) the appropriate sections of the Recommended International Code of Practice - General Principles of Food Hygiene (CAC/RCP 1-1985, Rev. 2);

(ii) the Recommended International Code of Practice for Frozen Fish (CAC/RCP 16-1978);

(iii) the Recommended International Code of Practice for the Processing and Handling of Quick Frozen Foods (CAC/RCP 8-1976);

(iv) the Draft International Code of Hygienic Practice for the Products of Aquaculture (under elaboration, 1994).

6. LABELLING

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

6.1 The Name of the Food

6.1.1 In addition to the common or usual name of the species, the label, in the case of eviscerated fish, shall include terms indicating that the fish has been eviscerated and whether presented as "head-on" or "headless".

6.1.2 If the product has been glazed with sea-water, a statement to this effect shall be made.

6.1.3 The term "quick frozen", shall also appear on the label, except that the term "frozen" may be applied in countries where this term is customarily used for describing the product processed in accordance with subsection 2.2 of this standard.

6.1.4 The label shall state that the product should be maintained under conditions that will maintain the quality during transportation, storage and distribution.

6.2 Net Contents (Glazed Products)

Where the food has been glazed the declaration of net contents of the food shall be exclusive of the glaze.

6.3 Storage Instructions

The label shall include terms to indicate that the product shall be stored at a temperature of -18°C or colder.

6.4 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, 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.

7. SAMPLING, EXAMINATION AND ANALYSES

7.1 Sampling

(i) Sampling of lots for examination of the product shall be in accordance with the FAO/WHO Codex Alimentarius Sampling Plans for Prepackaged Foods (AQL-6.5) CAC/RM 42-1977. A sample unit is the individual fish or the primary container.

(ii) Sampling of lots for examination of net weight 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 procedures elaborated in Sections 7.3, 7.4 and 7.5, Annex A and the "Code of Practice for the Sensory Evaluation of Fish and Shellfish" (under development).

7.3 Determination of Net Weight

7.3.1 Determination of Net Weight of 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.

7.3.2 Determination of Net Weight of Products Covered by Glaze

(To be elaborated).

7.4 Thawing

(To be elaborated).

7.5. Determination of Gelatinous Conditions

According to the AOAC Methods- "Moisture in Meat and Meat Products, Preparation of Sample Procedure"; 883.18 and "Moisture in Meat" (Method A); 950.46; AOAC 1990.

7.6 Cooking Methods

The following procedures are based on heating the product to an internal temperature of 65-70°C. The product must not be overcooked. Cooking times vary according to the size of the product and the temperatures used. The exact times and conditions of cooking for the product should be determined by prior experimentation.

Baking Procedure: Wrap the product in aluminum foil and place it evenly on a flat cookie sheet or shallow flat pan.

Steaming Procedure: Wrap the product in aluminum foil and place it on a wire rack suspended over boiling water in a covered container.

Boil-In-Bag Procedure: Place the product into a boilable film-type pouch and seal. Immerse the pouch into boiling water and cook.

Microwave Procedure: Enclose the product in a container suitable for microwave cooking. If plastic bags are used, check to ensure that no odour is imparted from the plastic bags. Cook according to equipment specifications.

7.7 Determination of histamine

AOAC 977.13 (15th Edition, 1990)[1]

8. DEFINITION OF DEFECTIVES

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

8.1 Deep Dehydration

Greater than 10% of the surface area of the block or greater than 10% of the weight of fish in the sample unit exhibits excessive loss of moisture clearly shown as white or yellow abnormality 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 fish.

8.2 Foreign Matter

The presence in the sample unit of any matter which has not been derived from fish (excluding packaging material), 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.

8.3 Odour and Flavour

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

8.4. Texture

8.4.1 Textural breakdown of the flesh, indicative of decomposition characterized by muscle structure which is mushy or paste-like, or by separation of flesh from the bones.

8.4.2 Flesh abnormalities

A sample unit affected by excessive gelatinous condition of the flesh together with greater then 86% moisture found in any individual fish or sample unit with pasty texture resulting from parasitic infestation affecting more than 5% of the sample unit by weight.

8.6 Belly Burst

The presence of ruptured bellies in uneviscerated fish, indicative of decomposition.

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1 Subject to endorsement by the Codex Committee on Methods of Analysis and Sampling.

9. 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 8 does not exceed the acceptance number (c) of the appropriate sampling plan in the Sampling Plans for Prepackaged Foods (AQL-6.5) (CAC/RM 42-1969);

(ii) the average net weight of all sample units is not less than the declared weight, provided there is no unreasonable shortage in any container; and

(iii) the Food Additives, Hygiene and Labelling requirements of Sections 3.4, 4, 5.1, 5.2 and 6 are met.

"ANNEX A"

SENSORY AND PHYSICAL EXAMINATION

1. Complete net weight determination, according to defined procedures in Section 7.3 (de-glaze as required).

2. Examine the frozen sample unit for the presence of deep dehydration by measuring those areas or counting instances which can only be removed with a knife or other sharp instrument. Measure the total surface area of the sample unit, and calculate the percentage affected.

3. Thaw and individually examine each fish in the sample unit for the presence of foreign matter.

4. Examine each fish using the criteria outlined in Section 8. Flesh odours are examined by tearing or making a cut across the back of the neck such that the exposed surface of the flesh can be evaluated.

5. In cases where a final decision regarding the odour or texture can not be made in the thawed uncooked state, a small portion of the flesh (approximately 200 g) is sectioned from the product and the odour, flavour or texture confirmed without delay by using one of the cooking methods defined in Section 7.5.

6. In cases where a final decision on gelatinous condition cannot be made in the thawed uncooked state, the disputed material is sectioned from the product and gelatinous condition confirmed by cooking as defined in Section 7.6 or by using the procedure in Section 7.5 to determine if greater than 86% moisture is present in any fish. If a cooking evaluation is inconclusive, then the procedure in 7.5 would be used to make the exact determination of moisture content.

APPENDIX VI

DRAFT REVISED STANDARD FOR QUICK FROZEN LOBSTERS
(CODEX STAN. 95-1981)
(At Step 8 of the Procedure)

1. SCOPE

This standard applies to quick frozen raw or cooked lobsters, rock lobsters, spiny lobsters and slipper lobsters. [1]

2. DESCRIPTION

2.1 Product Definition

2.1.1 The product is prepared from lobster from the genus *Homarus* of the family *Nephropidae* and from the families *Palinuridae* and *Scyllaridae*. It may also be prepared from *Nephrops norvegicus* provided it is presented as Norway lobster.

2.1.2 The pack shall not contain a mixture of species.

2.2 Process Definition

The water used for cooking shall be of potable quality or clean seawater.

The product, after any suitable preparation, shall be subjected to a freezing process and shall comply with the conditions laid down hereafter. The freezing process shall be carried out in appropriate equipment in such a way that the range of temperature of maximum 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 so as to maintain the quality during transportation, storage and distribution.

Quick frozen lobsters shall be processed and packaged so as to minimize dehydration and oxidation.

2.3. Presentation

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

2.3.2.1 meets all requirements of this standard;
2.3.2.2 is adequately described on the label to avoid confusing or misleading the consumer.

2.3.2 The lobster may be packed by count per unit of weight or per package or within a stated weight range.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Lobsters

The product shall be prepared from sound lobsters which are of a quality fit to be sold fresh for human consumption.

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1 Hereafter referred to as lobster.

3.2 Glazing

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.

3.3 Other Ingredients

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

3.4 Final Product

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

4. FOOD ADDITIVES

Only the use of the following additives is permitted.

Additive	Maximum level in the final product
Moisture/Water Retention Agents	
- Triphosphate, pentasodium or pentapotassium or calcium (Na, K or CA tripolyphosphates) - Polyphosphate, sodium (Na hexametaphosphate)	10 g/kg singly or in combination expressed as P_2O_5 (includes natural phosphates)
Preservatives	
- Sulphite, bisulphite or metabisulphite, sodium or potassium (for use in the raw product only)	100 mg SO_2/kg in the edible part of the raw product, or as 30mg SO_2/kg in the edible part of the cooked product, singly or in combination, expressed as SO_2
Antioxidants	
- Ascorbates, sodium or potassium salts	0.1% m/m expressed as ascorbic acid

5. HYGIENE AND HANDLING

5.1 The final product shall be free from any foreign material that poses a threat to human health.

5.2 When tested by appropriate methods of sampling and examination prescribed by the Codex Alimentarius Commission (CAC), the product:

(i) shall be free from microorganisms or substances originating from microorganisms in amounts which may present a hazard to health in accordance with standards established by the CAC; and

(ii) shall not contain any other substance in amounts which may present a hazard to health in accordance with standards established by the CAC.

5.3 It is recommended that the product covered by the provisions of this standard be prepared and handled in accordance with the following Codes:

(i) the appropriate sections of the Recommended International Code of Practice - General Principles of Food Hygiene (CAC/RCP 1-1985, Rev. 2);

(ii) the Recommended International Code of Practice for Lobster (CAC/RCP 24-1978);

(iii) the Recommended International Code of Practice for the Processing and Handling of Quick Frozen Foods (CAC/RCP 8-1976);

(iv) the Draft International Code of Hygienic Practice for the Products of Aquaculture (under elaboration, 1994).

6. 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:

6.1 **The Name of the Food**
The product shall be designated:

(i) Lobster if derived from the genus *Homarus*;

(ii) Rock Lobster, Spiny Lobster or Crawfish if derived from species of the family *Palinuridae*;

(iii) Slipper Lobster, Bay Lobster or Sand Lobster if derived from species of the family *Scyllaridae*;

(iv) Norway Lobster if derived from the species *Nephrops norvegicus*.

6.1.1 There shall appear on the label, reference to the form of 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.

6.1.2 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.

6.1.3 Products shall be designated as cooked or raw as appropriate.

6.1.4 If the product has been glazed with sea-water, a statement to this effect shall be made.

6.1.5 The term "quick frozen", shall also appear on the label, except that the term "frozen" may be applied in countries where this term is customarily used for describing the product processed in accordance with subsection 2.2 of this standard.

6.1.6 The label shall state that the product should be maintained under conditions that will maintain the quality during transportation, storage and distribution.

6.2 Net Contents (Glazed Products)

Where the food has been glazed the declaration of net contents of the food shall be exclusive of the glaze.

6.3 Storage Instructions

The label shall include terms to indicate that the product shall be stored at a temperature of -18°C or colder.

6.4 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.

7. SAMPLING, EXAMINATION AND ANALYSES

7.1 Sampling

(i) Sampling of lots for examination of the product shall be in accordance with the FAO/WHO Codex Alimentarius Sampling Plans for Prepackaged Foods (AQL - 6.5) CAC/RM 42-1977. In the case of shell on lobster the sample unit is an individual lobster. In the case of shell-off lobster the sample unit shall be at least a 1 kg portion of lobster from the primary container.

(ii) Sampling of lots for examination of net weight 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 using procedures elaborated in Sections 7.3 through 7.6, Annex A and the "Code of Practice for the Sensory Evaluation Shellfish" (under development).

7.3 Determination of Net Weight

7.3.1 Determination of net weight of 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.

7.3.2 Determination of Net Weight of Products Covered by Glaze
(Alternate Methods)

(1) As soon as the package is removed from frozen temperature storage, open immediately and place the contents under a gentle spray of cold water until all ice glaze that can be seen or felt is removed. Remove adhering water by the use of paper towel and weigh the product.

(2) The pre-weighed glazed sample is immersed into a water bath by hand, until all glaze is removed, which preferably can be felt by the fingers. As soon as the surface becomes rough, the still frozen sample is removed from the water bath and dried by use of a paper towel before estimating the net product content by second weighing. By this procedure thaw drip losses and/or re-freezing of adhering moisture can be avoided.

(3)(i) As soon as the package is removed from frozen temperature storage, place the product in a container containing an amount of fresh potable water of 27°C (80°F) equal to 8 times the declared weight of the product. Leave the product in the water until all ice is melted. If the product is block frozen, turn block over several time during thawing. The point at which thawing is complete can be determined by gently probing the block.

(ii) Weigh a dry clean sieve with woven wire cloth with nominal size of the square aperture 2.8 mm (ISO Recommendation R565) or alternatively 2.38 mm (U.S. No. 8 Standard Screen.)

(a) If the quantity of the total contents of the package is 500 g (1.1 lbs) or less, use a sieve with a diameter of 20 cm (8 inches).

(b) If the quantity of the total contents of the package is more than 500 g (1.1 lbs) use a sieve with a diameter of 30 cm (12 inches).

(iii) After all glaze that can be seen or felt has been removed and the lobsters separate easily, empty the contents of the container on the previously weighed sieve. Incline the sieve at an angle of about 20° and drain for two minutes.

(iv) Weigh the sieve containing the drained product. Subtract the mass of the sieve; the resultant figure shall be considered to be part of the net content of the package.

7.4 Determination of Count

When declared on the label, the count shall be determined by counting all lobsters or tails in the primary container and dividing the count of lobster by the average deglazed weight to determine the count per unit weight.

7.5 Procedure for Thawing (CAC/RM 40-1971)

The sample unit is thawed by enclosing it in a film type bag and immersing in water at room temperature (not greater than 35°C). The complete thawing of the product is determined by gently squeezing the bag occasionally so as not to damage the texture of the lobster, until no hard core or ice crystals are left.

7.6 Cooking Methods

The following procedures are based on heating the product to an internal temperature of 65-70°C. The product must not be overcooked. Cooking times vary according to the size of the product and the temperature used. The exact times and conditions of cooking for the product should be determined by prior experimentation.

Baking Procedure: Wrap the product in aluminum foil and place it evenly on a flat cookie sheet or shallow flat pan.
Steaming Procedure: Wrap the product in aluminum foil and place it on a wire rack suspended over boiling water in a covered container.
Boil-in-Bag Procedure: Place the product into a boilable film-type pouch and seal. Immerse the pouch into boiling water and cook.

Microwave Procedure: Enclose the product in a container suitable for microwave cooking. If plastic bags are used check to ensure that no odour is imparted from the plastic bags. Cook according to equipment specifications.

8. DEFINITION OF DEFECTIVES

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

8.1 Deep Dehydration

Greater than 10% of the weight of the lobster in the sample unit or greater than 10% of the surface area of the block exhibits excessive loss of moisture clearly shown as white or yellow abnormality 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 lobster.

8.2 Foreign Matter

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

8.3 Odour/Flavour

Lobster affected by persistent and distinct objectionable odours or flavours indicative of decomposition or rancidity, or feed.

8.4 Discolouration

Distinct blackening of more than 10% of the surface area of the shell of individual whole or half lobster, or in the case of tail meat and meat presentations distinct black, brown, green or yellow discolourations singly or in combination, of the meat affecting more than 10% of the declared weight.

9. 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 8 does not exceed the acceptance number (c) of the appropriate sampling plan in the Sampling Plans for Prepackaged Foods (AQL-6.5) (CAC/RM 42-1969);

(ii) the total number of sample units not meeting the count or weight range designation as defined in Section 2.3 does not exceed the acceptance number (c) of the appropriate sampling plan in the Sampling Plans for Prepackaged Foods (AQL - 6.5) (CAC/RM 42-1969);

(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 Food Additives, Hygiene and Labelling requirements of Sections 4, 5.1, 5.2 and 6 are met.

"ANNEX A"

SENSORIC AND PHYSICAL EXAMINATION

1. Complete net weight determination, according to defined procedures in Section 7.3 (de-glaze as required).

2. Examine the frozen lobster for the presence of deep dehydration. Determine the percentage of lobster affected.

3. Thaw using the procedure described in Section 7.5 and individually examine each sample unit for the presence of foreign and objectionable matter.

4. Examine product count and weight declarations in accordance with procedures in Section 7.4..

5. Assess the lobster for odour and discolouration as required.

6. In cases where a final decision regarding the odour/flavour cannot be made in the thawed state, a small portion of the sample unit (100 to 200 g) is prepared without delay for cooking and the odour/flavour confirmed by using one of the cooking methods defined in Section 7.6.

APPENDIX VII

DRAFT REVISED STANDARD FOR QUICK FROZEN FISH STICKS (FISH FINGERS) FISH PORTIONS AND FISH FILLETS - BREADED OR IN BATTER

(CODEX STAN. 166-1989)
(At Step 8 of the Procedure)

1. SCOPE

This standard applies to quick frozen fish sticks (fish fingers) and fish portions cut from quick frozen fish flesh blocks, or formed from fish flesh, and to natural fish fillets, breaded or batter coatings, singly or in combination, raw or partially cooked and offered for direct human consumption without further industrial processing.

2. DESCRIPTION

2.1 Product Definition

2.1.1 A fish stick (fish finger) is the product including the coating weighing not less than 20 g and not more than 50 g shaped so that the length is not less than three times the greatest width. Each stick shall be not less than 10 mm thick.

2.1.2 A fish portion including the coating, other than products under 2.1.1, may be of any shape, weight or size.

2.1.3 Fish sticks or portions may be prepared from a single species of fish or from a mixture of species with similar sensory properties.

2.1.4 Fillets are slices of fish of irregular size and shape which are removed from the carcass by cuts made parallel to the back bone and pieces of such fillets, with or without the skin.

2.2 Process Definition

The product after any suitable preparation shall be subjected to a freezing process and shall comply with the conditions laid down hereafter. The freezing process shall be carried out in appropriate equipment in such a way that the range of temperature of maximum 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 so as to maintain the quality during transportation, storage and distribution.

Industrial repacking or further industrial processing of intermediate quick frozen material under controlled conditions which maintains the quality of the product, followed by the re-application of the quick freezing process, is permitted.

2.3 Presentation

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

2.3.1 meets all the requirements of the standard, and

2.3.2 is adequately described on the label to avoid confusing or misleading the consumer.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Raw Material

3.1.1 Fish

Quick frozen breaded or battered fish sticks (fish fingers) breaded or battered fish portions and breaded or battered fillets shall be prepared from fish fillets or minced fish flesh, or mixtures thereof, of edible species which are of a quality such as to be sold fresh for human consumption.

3.1.2 Coating

The coating and all ingredients used therein shall be of food grade quality and conform to all applicable Codex standards.

3.1.3 Frying fat (oil)

A fat (oil) used in the cooking operation shall be suitable for human consumption and for the desired final product characteristic (see also Section 4).

3.2 Final Product

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

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. This shall apply only to species of *Clupeidae, Scombridae, Scombresocidae, Pomatomidae* and *Coryphaenedae* families.

4. FOOD ADDITIVES

Only the use of the following additives is permitted.

4.1 Food Additives (for Fish Fillets and Minced Fish Flesh only)

	Additive	Maximum Level in the final product
4.1.1	Moisture/Water Retention Agents	
	Monophosphate, monosodium or monopotassium (Monosodium or monopotassium orthophosphates	10 g/kg expressed as P_2O_5, singly or in combination (Includes natural phosphate)
	Diphosphate, tetrasodium or tetrapotassium (Na or K pyrophosphate)	
	Triphosphate, pentasodium or pentapotassium or Calcium (Na, K or Ca tripolyphosphate	
	Polyphosphate, sodium (Na hexametaphosphate	
	Sodium Alginate	5 g/kg
4.1.2	Antioxidants	
	Ascorbic acid or its sodium or potassium salts	1 g/kg expressed as ascorbic acid, singly or in combination
	Ascorbyl palmitate	

4.2	**In addition, for Minced Fish Flesh Only**		
4.2.1	Antioxidants		
	Citric acid or its sodium or potassium salts	}	1 g/kg singly or in combination
4.2.2	Thickeners		
	Guar Gum	}	
	Carob bean (locust bean) gum	}	
	Pectins		} 5 g/kg singly or in
	Carboxymethyl cellulose, sodium salt	}	combination
	Xanthan gum	}	
	Carrageenan	}	
	Methyl cellulose	}	
4.3	**Food Additives for Breaded or Batter Coatings**		
4.3.1	Leavening Agents		
	Monocalcium phosphate	}	
	Dicalcium phosphate	}	1 g/kg singly or in
	Sodium aluminium phosphate	}	combination,
	Sodium acid pyrophosphate	}	expressed as P_2O_5
	Sodium, potassium and ammonium carbonates	}	
	Sodium, potassium and ammonium bicarbonates	}	Limited by GMP
4.3.2	Flavour Enhancers		
	Monosodium glutamate	}	
	Monopotassium glutamate	}	Limited by GMP
4.3.3	Acidifying Agents		
	Lactic acid	}	1 g/kg of the final
	Citric acid or its sodium or potassium salts	}	product expressed as
		}	lactic or citric
		}	acid, as appropriate
4.3.4	Colours		
	Annatto	}	20 mg/kg expressed as
		}	bixin
	Caramel (plain)		Limited by GMP
	B-Carotene	}	100 mg/kg singly or
	B-apo-carotenal	}	in combination
	Paprika oleoresin		Limited by GMP
4.3.5	Thickeners		
	Guar Gum	}	
	Carob bean (Locust bean) gum	}	
	Carrageenan	}	
	Xanthan gum	}	5 g/kg singly or in
	Pectins	}	combination
	Sodium alginate	}	
	Hydroxypropyl cellulose	}	
	Hydroxypropyl methyl cellulose	}	
	Methylethylcellulose	}	
	Sodium carboxymethylcellulose	}	
	Methyl cellulose	}	

4.3.6 Emulsifiers

Monoglycerides of fatty acids	}	5 g/kg of the final product singly or in combination
Lecithins	}	
Mono and Diglycerides	}	

4.3.7 Modified Starches

Acid treated starches (including white and yellow dextrins)	}	Limited by GMP
Alkali treated starches		
Bleached or oxidized starches	}	
Distarch adipate, acetylated	}	
Distarch phosphate	}	
Distarch phosphate, acetylated	}	
Distarch phosphate, hydroxypropyl	}	
Distarch phosphate, phosphated	}	
Monostarch phosphate	}	
Starch acetate	}	
Starch, hydroxypropyl	}	

5. HYGIENE AND HANDLING

5.1 The final product shall be free from any foreign material that poses a threat to human health.

5.2 When tested by appropriate methods of sampling and examination prescribed by the Codex Alimentarius Commission (CAC), the product:

(i) shall be free from microorganisms or substances originating from microorganisms in amounts which may present a hazard to health in accordance with standards established by the CAC; and

(ii) shall not contain histamine that exceeds 20 mg/100 g. This applies only to species of *Clupeidae, Scombridae, Scombresocidae, Pomatomidae* and *Coryphaenedae* families.

(iii) shall not contain any other substance in amounts which may present a hazard to health in accordance with standards established by the CAC.

5.3 It is recommended that the product covered by the provisions of this standard be prepared and handled in accordance with the following Codes:

(i) the appropriate sections of the Recommended International Code of Practice - General Principles of Food Hygiene (CAC/RCP 1-1985, Rev. 2);

(ii) the Recommended International Code of Practice for Frozen Fish (CAC/RCP 16-1978);

(iii) the Recommended International Code of Practice for Frozen Battered and/or Breaded Fishery Products (CAC/RCP 35-1985);

(iv) the Recommended International Code of Practice for Minced Fish Prepared by Mechanical Separation (CAC/RCP 27-1983).

(v) the Recommended International Code of Practice for the Processing and Handling of Quick Frozen Foods (CAC/RCP 8-1976)

6. LABELLING

In addition to Sections 2, 3, 7 and 8 of the Codex General Standard for the Labelling of Prepackaged Foods (CODEX STAN 1-1985) the following specific provisions apply:

6.1 The Name of the Food

6.1.1 The name of the food to be declared on the label shall be "breaded" and/or "battered", "fish sticks" (fish fingers), "fish portions", or "fillets" as appropriate or other specific names used in accordance with the law and custom of the country in which the food is sold and in a manner so as not to confuse or mislead the consumer.

6.1.2 The label shall include reference to the species or mixture of species.

6.1.3 In addition there shall appear on the label either the term "quick frozen" or the term "frozen" whichever is customarily used in the country in which the food is sold, to describe a product subjected to the freezing processes as defined in subsection 2.2.

6.1.4 The label shall show whether the products are prepared from minced fish flesh, fish fillets or a mixture of both in accordance with the law and custom of the country in which the food is sold and in a manner so as not to confuse or mislead the consumer.

6.1.5 The label shall state that the product should be maintained under conditions that will maintain the quality during transportation, storage and distribution.

6.2 Storage Instructions

The label shall include terms to indicate that the product shall be stored at a temperature of -18°C or colder.

6.3 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 manufacturers 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.

7. SAMPLING, EXAMINATION AND ANALYSIS

7.1 Sampling

(i) Sampling of lots for examination of the product shall be in accordance with the FAO/WHO Codex Alimentarius Sampling Plans for Prepackaged Foods (AQL-6.5) CAC/RM 42-1969. For prepackaged goods the sample unit is the entire container. For products packed in bulk the sample unit is at least 1 kg of fish sticks (fish finger), fish portions or fillets.

(ii) Sampling of lots for examination of net weight shall be carried out in accordance with an appropriate sampling plan meeting the criteria established by the CAC.

7.2 Determination of Net Weight

The net weight (exclusive of packaging material) is determined on each whole primary container of each sample representing a lot and shall be determined in the frozen state.

7.3 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 7.4 through 7.7, Annex A and the "Code of Practice for the Sensory Evaluation of Fish and Shellfish" (under development).

7.4 Estimation of Fish Core

The fish core is estimated according to A.O.A.C. Method 971.13 (15th Edition, 1990) or to be verified by J.A.O.A.C. 69(1), 75-79 [1].

7.5 Determination of Gelatinous Conditions

According to the AOAC Methods - "Moisture in Meat and Meat Products, Preparation of Sample Procedure"; 983.18 and "Moisture in Meat" (Method A); 950.46; AOAC 1990.

7.6 Estimation of Proportion of Fish Fillets and Minced Fish Flesh

[To be elaborated]

7.7 Cooking Methods

The frozen sample shall be cooked prior to sensory assessment according to the cooking instructions on the package. When such instructions are not given, or equipment to cook the sample according to the instructions is not obtainable, the frozen sample shall be cooked according to the applicable method(s) given below:

Use procedure 976.16 of the A.O.A.C. (15th Edition 1990). It is based on heating product to an internal temperature of 65-70°C. Cooking times vary according to size of product and equipment used. If determining cooking time, cook extra samples, using a temperature measuring device to determine internal temperature.

8. DEFINITION OF DEFECTIVES

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

8.1 Foreign Matter (Cooked State)

The presence in the sample unit of any matter which has not been derived from fish (excluding packing material), 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 Bones (Cooked State) (In packs designated boneless)

More than one bone per kg greater or equal to 10 mm in length, or greater or equal to 1 mm in diameter; a bone less than or equal to 5 mm in length, is not considered a defect if its diameter is not more than 2 mm. The foot of a bone (where it has been attached to the vertebra) shall be disregarded if its width is less than or equal to 2 mm, or if it can easily be stripped off with a fingernail.

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1 This reference will be verified.

8.3 Odour and Flavour (Cooked State)

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

8.4 Flesh abnormalities

Objectionable textural characteristics such as gelatinous conditions of the fish core together with greater than 86% moisture found in any individual fillet or sample unit with pasty texture resulting from parasites affecting more than 5% of the sample unit by weight.

9. 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 8 does not exceed the acceptance number (c) of the appropriate sampling plan in the Sampling Plans for Prepackaged Foods (AQL-6.5) (CAC/RM 42-1977);

(ii) the average percent fish flesh of all sample units is not less than 50% of the frozen weight;

(iii) the average net weight of all sample units is not less than the declared weight, provided there is no unreasonable shortage in any container; and

(iv) the Food Additives, Hygiene and Labelling requirements of Sections 3.3, 4, 5.1, 5.2 and 6 are met.

"ANNEX A"

SENSORY AND PHYSICAL EXAMINATION

The sample used for sensory evaluation should not be the same as that used for other examinations.

1. Complete net weight determination, according to defined procedures in Section 7.2.

2. Complete fish core determination on one set of the sample units according to defined procedures in Section 7.4.

3. Complete the estimation of the proportion of fillets and minced flesh, if required.

4. Cook the other set of sample units and examine for odour, flavour, texture, foreign matter, and bones.

5. In cases where a final decision on gelatinous conditions cannot be made in the thawed uncooked state, the disputed material is sectioned from the product and gelatinous condition confirmed by cooking as defined in Section 7.7 or by using the procedure in Section 7.5 to determine if greater than 86% moisture is present in any product unit. If a cooking evaluation is inconclusive, then procedure in 7.5 would be used to make the exact determination of moisture content.

APPENDIX VIII

DRAFT REVISED STANDARD FOR QUICK FROZEN SHRIMPS OR PRAWNS
(CODEX STAN. 92-1981)
(At Step 8 of the Procedure)

1. SCOPE

This standard applies to quick frozen raw or partially or fully cooked shrimps or prawns,[1] peeled or unpeeled.

2. DESCRIPTION

2.1 Product Definition

2.1.1 Quick frozen shrimp is the product obtained from species of the following families:

(a) *Penaeidae*
(b) *Pandalidae*
(c) *Crangonidae*
(d) *Palaemonidae*

2.1.2 The pack shall not contain a mixture of genera but may contain a mixture of species of the same genus which have similar sensory properties.

2.2 Process Definition

The water used for cooking and cooling shall be of potable quality or clean seawater.

The product, after any suitable preparation, shall be subjected to a freezing process and shall comply with the conditions laid down hereafter. The freezing process shall be carried out in appropriate equipment in such a way that the range of temperature of maximum 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 so as to maintain the quality during transportation, storage and distribution.

Quick frozen shrimps shall be processed and packaged so as to minimize dehydration and oxidation.

2.3 Presentation

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

2.3.1.1 meets all requirements of this standard; and

2.3.1.2 is adequately described on the label to avoid confusing or misleading the consumer.

2.3.2 The shrimp may be packed by count per unit of weight or per package.

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1 Hereafter referred to as shrimp.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Shrimp

Quick frozen shrimp shall be prepared from sound shrimp which are of a quality fit to be sold fresh for human consumption.

3.2 Glazing

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.

3.3 Other Ingredients

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

3.4 Final Product

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

4. FOOD ADDITIVES

Only the use of the following additives is permitted.

Additive	Maximum level in the final product
pH Regulating Agents	Limited by Good Manufacturing Practice
Citric acid	
Diphosphate, tetrasodium or tetrapotassium Triphosphate, pentasodium or (Na or K pyrophosphate) (Na or K pentapotassium tripolyphosphates)	10 g/kg expressed as P_2O_5, singly or in combination (includes natural phosphate)
Antioxidant L-Ascorbic acid	Limited by Good Manufacturing Practice
Colours Ponceau 4 R, CI 16255	30 mg/kg in heat treated products only

Preservatives		
Metabisulphite, sodium or potassium	}	100 mg/kg in the edible
Sulphite	}	part of the raw material
	}	30 mg/kg in the edible
	}	part of the cooked
	}	product, expressed as
	}	SO2; singly or in
	}	combination

5. HYGIENE AND HANDLING

5.1 The final product shall be free from any foreign material that poses a threat to human health.

5.2 When tested by appropriate methods of sampling and examination prescribed by the Codex Alimentarius Commission (CAC), the product:

(i) shall be free from microorganisms or substances originating from microorganisms in amounts which may present a hazard to health in accordance with standards established by the CAC; and

(ii) shall not contain any other substance in amounts which may present a hazard to health in accordance with standards established by the CAC.

5.3 It is recommended that the product covered by the provisions of this standard be prepared and handled in accordance with the following Codes:

(i) the appropriate sections of the Recommended International Code of Practice - General Principles of Food Hygiene (CAC/RCP 1-1985, Rev. 2);

(ii) the Recommended International Code of Practice for Frozen Fish (CAC/RCP 16-1978);

(iii) the Recommended International Code of Practice for Shrimp or Prawns (CAC/RCP 17-1978 and Supplement November 1989);

(iv) the Recommended International Code of Practice for the Processing and Handling of Quick Frozen Foods (CAC/RCP 8-1976);

(v) the Draft International Code of Hygienic Practice for the Products of Aquaculture (under elaboration, 1994)

6. LABELLING

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

6.1 The Name of the Food

The name of the product as declared on the label shall be "shrimps" or "prawns" according to the law, custom or practice in the country in which the product is to be distributed.

6.1.1 There shall appear on the label, reference to the 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.

6.1.2 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.

6.1.3 Products shall be designated as cooked, or partially cooked, or raw as appropriate.

6.1.4 If the product has been glazed with sea-water, a statement to this effect shall be made.

6.1.5 The term "quick frozen", shall also appear on the label, except that the term "frozen" may be applied in countries where this term is customarily used for describing the product processed in accordance with subsection 2.2 of this standard.

6.1.6 The label shall state that the product should be maintained under conditions that will maintain the quality during transportation, storage and distribution.

6.2 Net Contents (Glazed Products)

Where the food has been glazed the declaration of net contents of the food shall be exclusive of the glaze.

6.3 Storage Instructions

The label shall include terms to indicate that the product shall be stored at a temperature of -18°C or colder.

6.4 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 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.

7. SAMPLING, EXAMINATION AND ANALYSES

7.1 Sampling

(i) Sampling of lots for examination of the product shall be in accordance with the FAO/WHO Codex Alimentarius Sampling Plans for Prepackaged Foods (AQL - 6.5) CAC/RM 42-1969. The sample unit is the primary container or for individually quick frozen products is at least a 1 kg portion of the sample unit.

(ii) Sampling of lots for examination of net weight 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 procedures elaborated in Sections 7.3 through 7.6, Annex A and the "Code of Practice for the Sensory Evaluation of Fish and Shellfish" (under development).

7.3 Determination of Net Weight

7.3.1 Determination of net weight of 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.

7.3.2 Determination of Net Weight of Products Covered by Glaze

(To be elaborated)

7.4 Determination of Count

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

7.5 Procedures for Thawing

The sample unit is thawed by enclosing it in a film type bag and immersing in water at room temperature (not greater than 35°C). The complete thawing of the product is determined by gently squeezing the bag occasionally so as not to damage the texture of the shrimp, until no hard core or ice crystals are left.

7.6 Cooking Methods

The following procedures are based on heating the product to an internal temperature of 65-70°C. The product must not be overcooked. Cooking times vary according to the size of the product and the temperature used. The exact times and conditions of cooking for the product should be determined by prior experimentation.

Baking Procedure: Wrap the product in aluminum foil and place it evenly on a flat cookie sheet or shallow flat pan.

Steaming Procedure: Wrap the product in aluminum foil and place it on a wire rack suspended over boiling water in a covered container.

Boil-in-Bag Procedure: Place the product into a boilable film-type pouch and seal. Immerse the pouch into boiling water and cook.

Microwave Procedure: Enclose the product in a container suitable for microwave cooking. If plastic bags are used, check to ensure that no odour is imparted from the plastic bags. Cook according to equipment instructions.

8. DEFINITION OF DEFECTIVES

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

8.1 Deep Dehydration

Greater than 10% of the weight of the shrimp in the sample unit or greater than 10% of the surface area of the block exhibits excessive loss of moisture clearly shown as white or yellow abnormality 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 shrimp.

8.2 Foreign Matter

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

8.3 Odour/Flavour

Shrimp affected by persistent and distinct objectionable odours or flavours indicative of decomposition or rancidity or of feed.

8.4 Discolouration

Distinct blackening or green or yellow discoloration, singly or in combination of more than 10% of the surface area of individual shrimp which affects more than 25% of the sample unit.

9. 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 8 does not exceed the acceptance number (c) of the appropriate sampling plan in the Sampling Plans for Prepackaged Foods (AQL-6.5) (CAC/RM 42-1977);

(ii) the total number of sample units not meeting the count designation as defined in section 2.3 does not exceed the acceptance number (c) of the appropriate sampling plan in the Sampling Plans for Prepackaged Foods (AQL - 6.5) (CAC/RM 42-1969);

(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 Food Additives, Hygiene and Labelling requirements of Sections 4, 5.1, 5.2 and 6 are met.

"ANNEX A"

SENSORY AND PHYSICAL EXAMINATION

1. Complete net weight determination, according to defined procedures in Section 7.3 (de-glaze as required).

2. Examine the frozen shrimp in the sample unit or the surface of the block for the presence of dehydration. Determine the percentage of shrimp or surface area affected.

3. Thaw using the procedure described in Section 7.5 and individually examine each shrimp in the sample unit for the presence of foreign matter and presentation defects. Determine the weight of shrimp affected by presentation defects.

4. Examine product for count declarations in accordance with procedures in Section 7.4.

5. Assess the shrimp for odour and discolouration as required.

6. In cases where a final decision regarding the odour/flavour cannot be made in the thawed state, a small portion of the sample unit (100 to 200 g) is prepared without delay for cooking and the odour/flavour confirmed by using one of the cooking methods defined in Section 7.6.

APPENDIX IX

DRAFT REVISED STANDARD FOR CANNED CRAB MEAT
(CODEX STAN. 90-1981)
(At Step 8 of the Procedure)

1. SCOPE

This standard applies to canned crab meat. It does not apply to specialty products where crab meat constitutes only a part of the edible contents, nor to products which include other edible parts of the crab.

2. DESCRIPTION

2.1 Product Definition

Canned crab meat is prepared singly or in combination from the leg, claw, body and shoulder meat from which the shell has been removed, of any of the edible species of the sub-order *Brachyura* of the order Decapoda and all species of the family *Lithodidae*.

2.2 Process Definition

Canned crab meat is 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) meets all requirements of this standard; and

(ii) is adequately described on the label to avoid confusing or misleading the consumer.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Crab Meat

Canned crab meat shall be prepared from sound crab of the species designated in 2.1 which are alive immediately prior to the commencement of processing and of a quality suitable 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 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. Products shall be examined by the methods given in Section 7.

4. FOOD ADDITIVES

Only the use of the following additives is permitted.

Additive	Maximum Level in the Final Product
pH Regulating Agents	
Disodium diphosphate (Syn.: Sodium acid pyrophosphate) Phosphoric acid	10 g/kg, singly or in combination expressed as P_2O_5 (includes natural phosphates)
Citric acid	Limited by Good Manufacturing Practice
Sequestrant	
Calcium disodium EDTA	250 mg/kg
Flavour Enhancer	
Monosodium glutamate	500 mg/kg

5. HYGIENE AND HANDLING

5.1 The final product shall be free from any foreign material that poses a threat to human health.

5.2 When tested by appropriate methods of sampling and examination prescribed by the Codex Alimentarius Commission (CAC), the product:

(i) shall be free from micro-organisms capable of development under normal conditions of storage; and

(ii) 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 CAC; and

(iii) shall be free from container integrity defects which may compromise the hermetic seal.

5.3 It is recommended that the products covered by the provisions of this standard be prepared in accordance with the following codes:

(i) the appropriate sections of the Recommended International Code of Practice - General Principles of Food Hygiene (CAC/RCP 1-1969, Rev. 1);

(ii) the Recommended International Code of Practice for Canned Fish (CAC/RCP 10-1976);

(iii) the Recommended International Code of Hygienic Practice for Low-Acid and Acidified Low-Acid Canned Foods (CAC/RCP 23-1979);

(iv) the Recommended International Code of Practice for Crabs (CAC/RCP 28-1983);

(v) the Draft International Code of Hygienic Practice for the Products of Aquaculture (under elaboration, 1994).

6. LABELLING

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

6.1 Name of the Food

6.1.1 The name of the product shall be "crab" or "crabmeat".

6.1.2 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 3.3 shall be in accordance with the FAO/WHO Codex Alimentarius Sampling Plans for Prepackaged Foods (1969) (AQL-6.5) (Ref. CAC/RM 42-1969).

(ii) Sampling of lots for examination of net weight and drained weight shall be carried out in accordance with an appropriate sampling plan meeting the criteria established by the CAC.

7.2 Sensoric and Physical Examination

Samples taken for sensoric and physical examination shall be assessed by persons trained in such examination and in accordance with Annex A and the "Code of Practice for the Sensory Examination of Fishand Shellfish" (under development).

7.3 Determination of Net Weight

Net weight of all sample units shall be determined by the following procedures:

(i) Weigh the unopened container.

(ii) Open the container and remove the contents.

(iii) Weigh the empty container, including the end and any wrapping material, after removing excess liquid and adhering meat.

(iv) Subtract the weight of the empty container and any wrapping material from the weight of the unopened container. The resultant figure is the net content.

7.4 Determination of Drained Weight

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

(i) Maintain the container at a temperature of between 20°C and 30°C for a minimum of 12 hours prior to examination.

(ii) Open the container and distribute the contents on a pre-weighed circular sieve having a wire mesh with square openings of 2.8 mm x 2.8 mm.

(iii) Remove all wrapping material and incline the sieve at an angle of approximately 17-20° and allow the meat to drain two minutes, measured from the time the product is poured onto the sieve.

(iv) Weigh the sieve containing the drained crab meat.

(v) Determine the weight of drained crab meat by subtracting the mass of the sieve from the mass of the sieve with drained product.

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 crab meat, 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; or

(ii) Excessively tough flesh uncharacteristic of the species in the presentation.

8.4 Discolouration

A sample unit affected by distinct discolourations indicative of decomposition or rancidity or by blue, brown, black discolourations exceeding 5% by weight of the drained contents, or black sulphide staining of the meat exceeding 5% by weight of the drained contents.

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 shall 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 in the Sampling Plans for Prepackaged Foods (AQL-6.5) (CAC/RM 42-1977);

(ii) the total number of sample units not meeting the form of presentation defined in Section 2.3 does not exceed the acceptance number (c) of the appropriate sampling plan in the Sampling Plans for Prepackaged Foods (AQL - 6.5) (CAC/RM 42-1977);

(iii) the average net weight and 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 Additive, Hygiene and Labelling requirements of Sections 4, 5.1, 5.2 and 6 are met.

ANNEX "A"

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 and 7.4.

3. Examine product for discolouration, foreign and objectionable matter.

4. Assess odour, flavour and texture in accordance with the "Code of Practice for the Sensory Evaluation of Fish and Shellfish" (under development).

APPENDIX X

DRAFT REVISED STANDARD FOR CANNED FINFISH
(CODEX STAN. 119-1981)
(At Step 8 of the Procedure)

1. SCOPE

This standard applies to canned finfish packed in water, oil or other suitable packing medium. It does not apply to speciality products where the canned finfish constitutes less than 50% m/m of the net contents of the can or to canned finfish covered by other Codex product standards.

2. DESCRIPTION

2.1 Product Definition

Canned finfish is the product produced from the flesh of any species of finfish (other than canned finfish covered by other Codex product standards) which is suitable for human consumption and may contain a mixture of species, with similar sensoric properties, from within the same genus.

2.2 Process Definition

Canned finfish 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) meets all requirements of this standard; and
(ii) is adequately described on the label to avoid confusing or misleading the consumer.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Fish

The product shall be prepared from sound finfish from which the heads, tails and viscera have been removed. The raw material shall be 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

Canned finfish of the families Scombridae, Scombresocidae, Clupeidae, Coryphaenidae and Pomatomidae shall not contain more than 10 mg/100 g of histamine based on the average of the sample units tested.

3.4 Final Product

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

4. FOOD ADDITIVES

Additive	Maximum level in the packing medium
Thickening of jellifying agents (for use in packing medium only):	
- sodium carboxymethylcellulose (CMC)	2.5 g/kg
- Pectins	2.5 g/kg
- Agar agar	Singly or in combination 20 g/kg
- Carrageenan	
- Guar gum	
- Carob bean gum	
- Tragacanth gum	
- Alginic acid as calcium, potassium, sodium salts	
- Xanthan gum	
Modified Starches (Chemically)	Singly or in combination 60 g/kg
- Acid-treated starches (including white and yellow dextrins)	
- Alkali-treated starches	
- Bleached starches	
- Distarch adipate, acetylated	
- Distarch glycerol	
- Distarch glycerol, acetylated	
- Distarch glycerol, hydroxypropyl	
- Distarch phosphate	
- Distarch phosphate, acetylated	
- Distarch phosphate, hydroxypropyl	
- Monostarch phosphate	
- Oxidized starch	
- Starch acetate	
- Starch, hydroxypropyl	
Acidifying Agents	Limited by Good Manufacturing Practices
- Acetic acid	
- Citric acid	
- Lactic acid	
Natural Flavours, e.g.	Limited by GMP
- Spice oils	
- Spice extracts	
Smoke Flavours (natural smoke solutions and their extracts) (*)	Limited by GMP

(*) Temporarily endorsed

5. HYGIENE AND HANDLING

5.1 The final product shall be free from any foreign material that poses a threat to human health.

5.2 When tested by appropriate methods of sampling and examination prescribed by the Codex Alimentarius Commission (CAC), the product:

(i) shall be free from micro-organisms capable of development under normal conditions of storage; and

(ii) no sample unit shall contain histamine that exceeds 20 mg per 100 g. This applies only to species of the families Scombridae, Clupeidae, Coryphaenidae, Scombresocidae and Pomatomidae.

(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 CAC; and

(iv) shall be free from container integrity defects which may compromise the hermetic seal.

5.3 It is recommended that the products covered by the provisions of this standard be prepared in accordance with the following codes:

(i) the appropriate sections of the Recommended International Code of Practice - General Principles of Food Hygiene (CAC/RCP 1-1969, Rev. 1);

(ii) the Recommended International Code of Practice for Canned Fish (CAC/RCP 10-1976);

(iii) the Recommended International Code of Hygienic Practice for Low-Acid and Acidified Low-Acid Canned Foods (CAC/RCP 26-1979);

(iv) the Draft International Code of Hygenic Practice for the Products of Aquaculture (under elaboration, 1994).

6. LABELLING

In addition to the provisions of the Codex General Standard for the Labelling of Prepackaged Foods (CODEX STAN 1-1985) the following specific provisions apply.

6.1 Name of the Food

6.1.1 The name of the product declared on the label shall be the common or usual name applied to the species 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.

6.1.2 The name of the product shall be qualified by a term descriptive of the presentation.

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

6.1.4 Where a mixture of species of the same genus are used, they shall be indicated on the label.

6.1.5 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 3.3 shall be in accordance with the FAO/WHO Codex Alimentarius Sampling Plans for Prepackaged Foods (1969) (AQL-6.5) (Ref. CAC/RM 42-1977).

(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 Sensoric and Physical Examination

Samples taken for sensoric and physical examination shall be assessed by persons trained in such examination and in accordance with Sections 7.3 through 7.5, Annex A and the "Code of Practice for the Sensory Evaluation of Fish and Shellfish" (under development).

7.3 Determination of Net Weight

The net weight 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 Determination of Washed Drained Weight (for packs with sauces)

(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

AOAC 977.13 (15th Edition, 1990)[1]

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 fish or the packing medium, 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) Excessive mushy flesh uncharacteristic of the species in the presentation; or

(ii) Excessively tough flesh uncharacteristic of the species in the presentation; or

(iii) Honey combed flesh in excess of 5% of the drained contents.

8.4 Discolouration

A sample unit affected by distinct discolouration of the flesh indicative of decomposition or rancidity or by sulphide staining of more than 5% of the drained contents.

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 shall 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 in the Sampling Plans for Prepackaged Foods (AQL-6.5) (CAC/RM 42-1977);

[1]Subject to endorsement by the Codex Committee on Methods of Analysis and Sampling.

(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 in the Sampling Plans for Prepackaged Foods (AQL-6.5) (CAC/RM 42-1977);

(iii) the average net weight and 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 Additive, Hygiene and Handling and Labelling requirements of Sections 3.3, 5, and 6 are met.

ANNEX "A"

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. Examine the product for the form of presentation.

4. Examine product for discolouration, foreign and objectionable matter. The presence of a hard bone is an indicator of underprocessing and will require an evaluation for sterility.

5. Assess odour, flavour and texture in accordance with the "Code of Practice for the Sensory Evaluation of Fish and Shellfish" (under development).

APPENDIX XI

DRAFT REVISED STANDARD FOR CANNED SALMON
(CODEX STAN.3-1981)
(At Step 8 of the Procedure)

1. SCOPE

This standard applies to canned salmon.

2. DESCRIPTION

2.1 Product Definition

2.1.1 Canned Salmon is the product prepared from headed and eviscerated fish of any of the species listed below from which the fins and tails have been removed, and to which salt, salmon oil and/or other edible oils may have been added.

- *Salmo salar*
- *Oncorhynchus nerka*
- *Oncorhynchus kisutch*
- *Oncorhynchus tschawytscha*
- *Oncorhynchus gorbuscha*
- *Oncorhynchus keta*
- *Oncorhynchus masou*

2.2 Process Definition

Canned salmon is packed in hermetically sealed containers and shall have received a processing treatment sufficient to ensure commercial sterility.

2.3 Presentation

2.3.1 Canned salmon shall consist of sections which are cut transversely from the fish and which are filled vertically into the can. The sections shall be packed so that the cut surfaces are approximately parallel with the ends of the container.

2.3.2 Any other presentation shall be permitted provided that it:

(i) is sufficiently distinctive from the form of presentation laid down under 2.3.1;

(ii) meets all other requirements of this standard; and

(iii) is adequately described on the label to avoid confusing or misleading the consumer.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Salmon

The product shall be prepared from sound fish of the species in Section 2.1 and of a quality fit to be sold fresh for human consumption.

3.2 Other Ingredients

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

3.3 Final Product

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

4. FOOD ADDITIVES

No additives are permitted in this product.

5. HYGIENE AND HANDLING

5.1 The final product shall be free from any foreign material that poses a threat to human health.

5.2 When tested by appropriate methods of sampling and examination prescribed by the Codex Alimentarius Commission (CAC), the product:

(i) shall be free from microorganisms capable of development under normal conditions of storage; and

(ii) shall not contain any other substance derived from microorganisms in amounts which may represent a hazard to health in accordance with standards established by the CAC; and

(iii) shall be free from container integrity defects which may compromise the hermetic seal.

5.3 It is recommended that the products covered by the provisions of this standard be prepared in accordance with the following codes:

(i) the appropriate sections of the Recommended International Code of Practice - General Principles of Food Hygiene (CAC/RCP 1-1969, Rev. 1);

(ii) the Recommended International Code of Practice for Canned Fish (CAC/RCP 10-1976);

(iii) the Recommended International Code of Hygienic Practice for Low-Acid and Acidified Low-Acid Canned Foods (CAC/RCP 23-1979);

(iv) the Recommended International Code of Hygienic Practice for the Products of Aquaculture (under elaboration, 1994).

6. LABELLING

In addition to the provisions of the Codex General Standard for Labelling of Prepackaged Foods (CODEX STAN 1-1985) the following specific provisions shall apply.

6.1 The Name of the Food

The name of the product shall be the designation appropriate to the species of the fish according to the law, custom or practice in the country in which the product is to be distributed.

6.2 Packing Medium

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

6.3 Presentation

The presentation provided for in Section 2.3.2 shall be declared in close proximity to the common name.

7. SAMPLING, EXAMINATION AND ANALYSES

7.1 Sampling

(i) Sampling of lots for examination of the final product as prescribed in Section 3.3 shall be in accordance with the FAO/WHO Codex Alimentarius Sampling Plans for Prepackaged Foods (1969) (AQL-6.5) (Ref. CAC/RM 42-1977).

(ii) Sampling of lots for examination of net weight shall be carried out in accordance with an appropriate sampling plan meeting the criteria established by the CAC.

7.2 Sensory Evaluation and Physical Examination

Samples taken for sensoric and physical examination shall be assessed by persons trained in such examination and in accordance with Section 7.3, Annex A and the "Code of Practice for the Sensory Evaluation of Fish and Shellfish" (under development).

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 for products packed with edible oils other than salmon oil

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.

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 salmon or the packing medium 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) Excessive mushy flesh uncharacteristic of the species in the presentation; or
(ii) Excessively tough flesh uncharacteristic of the species in the presentation; or
(iii) Honey combed flesh in excess of 5% of the net contents.

8.4 Discolouration

A sample unit affected by distinct discolouration indicative of decomposition or rancidity or by sulphide staining of the meat exceeding 5% of the net contents.

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 shall 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 in the Sampling Plans for Prepackaged Foods (AQL - 6.5) (CAC/RM 42-1977);

(ii) the total number of sample units not meeting the form of presentation as defined in Section 2.3 does not exceed the acceptance number (c) of the appropriate sampling plan in the Sampling Plans for Prepackaged Foods (AQL-6.5) (CAC/RM 42-1977);

(iii) the average net weight of all sample units examined is not less than the declared weight or drained weight as appropriate, and provided there is no unreasonable shortage in any individual container;

(iv) the Food Additives, Hygiene and Labelling requirements of Sections 4, 5.1, 5.2 and 6 are met.

ANNEX "A"

SENSORY AND PHYSICAL EXAMINATION

1. Complete external can examination for the presence of container integrity defects or can ends which may be distorted outward.

2. Open can and complete weight determination according to defined procedures in Section 7.3 and 7.4.

3. Examine product for discolouration, foreign and objectionable matter. The presence of hard bone is an indicator of underprocessing and will require an evaluation for sterility.

4. Assess odour, flavour and texture in accordance with the "Code of Practice for the Sensory Evaluation of Fish and Shellfish" (under development).

APPENDIX XII

DRAFT REVISED STANDARD FOR CANNED SARDINES AND SARDINE-TYPE PRODUCTS
(CODEX STAN. 94-1981)
(At Step 8 of the Procedure)

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

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

- *Sardina pilchardus*
- *Sardinops melanostictus, S. neopilchardus, S. ocellatus, S. sagax S. caeruleus,*
- *Sardinella aurita, S. brasiliensis, S. maderensis, S. longiceps, S. gibbosa*
- *Clupea harengus*
- *Sprattus sprattus*
- *Hyperlophus vittatus*
- *Nematalosa vlaminghi*
- *Etrumeus teres*
- *Ethmidium maculatum*
- *Engraulis anchoita, E. mordax, E. ringens*
- *Opisthonema oglinum*

2.1.2 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 ungutted, 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) contain 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 the use of the following additives is permitted.

Additive	Maximum level in the packing medium
Thickening or jellifying agents (for use in packing medium only):	
- Sodium carboxymethyl cellulose (CMC)	20 g/kg singly or in combination in the packing medium
- Pectins	
- Agar agar	
- Carrageenan	
- Guar gum	
- Carob bean gum	
- Alginic acids and its calcium, potassium and sodium salts	
- Xanthan gum	
Modified Starches (Chemically)	
- Acid-treated starches (including white and yellow dextrins)	Singly or in combination 60 g/kg
- Alkali-treated starches	
- Bleached starches	
- Distarch adipate, acetylated	
- Distarch glycerol	
- Distarch glycerol, acetylated	
- Distarch glycerol, hydroxypropyl	
- Distarch phosphate	
- Distarch phosphate, acetylated	
- Distarch phosphate, hydroxypropyl	

- Monostarch phosphate	}	Singly or in combination
- Oxidized starch	}	60 g/kg
- Starch acetate	}	
- Starch, hydroxypropyl	}	

Acidifying agents:

- Acetic acid	}	Limited by Good
- Citric acid	}	Manufacturing
- Lactic acid	}	Practices

Natural flavours, e.g.

- Spice oils	}	Limited by Good
- Spice extracts	}	Manufacturing Practices

Smoke flavours

(natural smoke solutions and their extracts)	}	Limited by Good Manufacturing Practices

5. HYGIENE AND HANDLING

5.1 The final product shall be free from any foreign material that poses a threat to human health.

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

(i) shall be free from micro-organisms capable of development under normal conditions of storage; and

(ii) no sample unit shall contain histamine that exceeds 20mg per 100 g; and

(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 CAC; and

(iv) shall be free from container integrity defects which may compromise the hermetic seal.

5.3 It is recommended that the products covered by the provisions of this standard be prepared in accordance with the following codes:

(i) the appropriate sections of the Recommended International Code of Practice - General Principles of Food Hygiene (CAC/RCP 1-1969, Rev. 1);

(ii) the Recommended International Code of Practice for Canned Fish (CAC/RCP 10-1976);

(iii) the Recommended International Code of Hygienic Practice for Low-Acid and Acidified Low-Acid Canned Foods (CAC/RCP 23-1979).

6. LABELLING

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

6.1 Name of the Food

The name of the product shall be:

6.1.1 (i) "Sardines" (to be reserved exclusively for *Sardina pilchardus* (Walbaum)); or

(ii) "X sardines" of a country, a geographic area, the species, or the common name of the species 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.

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

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

6.1.4 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 3.3 shall be in accordance with the FAO/WHO Codex Alimentarius Sampling Plans for Prepackaged Foods (AQL-6.5) (Ref. CAC/RM 42-1977);

(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 Sensoric and Physical Examination

Samples taken for sensoric and physical examination shall be assessed by persons trained in such examination and in accordance with Annex A and the "Code of Practice for the Sensory Evaluation of Fish and Shellfish" (under development).

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

AOAC 977.13 (15th Edition, 1990)[1]

8. DEFINITION OF DEFECTIVES

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

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1 Subject to endorsement by the Codex Committee on Methods of Analysis and Sampling.

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 in the Sampling Plans for Prepackaged Foods (AQL-6.5) (CAC/RM 42-1977);

(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 in the Sampling Plans for Prepackaged Foods (AQL-6.5) (CAC/RM 42-1977);

(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 3.3, 4, 5.1, 5.2 and 6 are met.

ANNEX "A"

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 and 7.4.

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 "Code of Practice for the Sensory Evaluation of Fish and Shellfish" (under development).

APPENDIX XIII

DRAFT REVISED STANDARD FOR CANNED SHRIMPS OR PRAWNS
(CODEX 37-1981)
(At Step 8 of the Procedure)

1. SCOPE

This standard applies to canned shrimps or canned prawns.[1] It does not apply to specialty products where shrimp constitutes less than 50% m/m of the contents.

2. DESCRIPTION

2.1 Product Definition

Canned shrimp is the product prepared from any combination of species of the families *Penaeidae*, *Pandalidae*, *Crangonidae* and *Palaemonidae* from which heads, shell, antennae have been removed.

2.2 Process Definition

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

2.3 Presentation

The product shall be presented as:

2.3.1 Peeled shrimp - shrimp which have been headed and peeled without removal of the dorsal tract;

2.3.2 Cleaned or de-veined - peeled shrimp which have had the back cut open and the dorsal tract removed at least up to the last segment next to the tail. The portion of the cleaned or de-veined shrimp shall make up 95% of the shrimp contents;

2.3.3 Broken shrimp - more than 10% of the shrimp contents consist of pieces of peeled shrimp of less than four segments with or without the vein removed;

2.3.4 Other Forms of Presentation

Any other presentation shall be permitted provided that it:

2.3.4.1 is sufficiently distinctive from other forms of presentation laid down in this standard;

2.3.4.2 meets all other requirements of this standard;

2.3.4.3 is adequately described on the label to avoid confusing or misleading the consumer.

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1 Hereafter referred to as "shrimp".

2.3.5 Size

Canned shrimp may be designated as to size in accordance with:

(i) the actual count range may be declared on the label; or

(ii) provisions given in Annex "B".

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Shrimp

Shrimp shall be prepared from sound shrimp of the species in 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 Final Product

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

4. FOOD ADDITIVES

Only the use of the following additives is permitted.

4.1 Colours

The following colours may be added at the level provided for in the standard for the purpose of restoring colour lost in processing:

Additive		Maximum Level in the Final Product
Amaranth (*)	CI 16185 }	30 mg/kg of the
Ponceau 4R (*)	CI 16255 }	final product
Sunset Yellow FCF	CI 15985 }	singly or in
Tartrazine	CI 19140 }	combination

4.2 Miscellaneous

Additive		Maximum Level in the Final Product
Calcium disodium ethylenediaminetetraacetate ($Ca\ Na_2$ EDTA)	} } }	250 mg/kg of the final product

Citric acid	Limited by GMP
Orthophosphoric acid (*)	850 mg/kg of the final product

(*) Temporarily endorsed.

5. HYGIENE AND HANDLING

5.1 The final product shall be free from any foreign material, that poses a threat to human health.

5.2 When tested by appropriate methods of sampling and examination by the Codex Alimentarius Commission (CAC), the product:

(i) shall be free from micro-organisms capable of development under normal conditions of storage; and

(ii) shall not contain any other substances including substances derived from micro organisms in amounts which may represent a hazard to health in accordance with standards established by the CAC; and

(iii) shall be free from container integrity defects which may compromise the hermetic seal.

5.3 It is recommended that the products covered by the provisions of this standard be prepared in accordance with the following codes:

(i) the appropriate sections of the Recommended International Code of Practice - General Principles of Food Hygiene (CAC/RCP 1-1985, Rev. 2);

(ii) the Recommended International Code of Practice for Canned Fish (CAC/RCP 10-1976);

(iii) the Recommended International Code of Hygienic Practice for Low-Acid and Acidified Low-Acid Canned Foods (CAC/RCP 23-1979);

(iv) the Recommended International Code of Practice for Shrimps or Prawns (CAC/RCP 17-1978).

(v) the Draft International Code of Hygienic Practice for the Products of Aquaculture (under elaboration, 1994).

6. LABELLING

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

6.1 The Name of the Food

6.1.1 The name of the product as declared on the label shall be "shrimp", or "prawns", and may be preceded or followed by the common or usual name of the species 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.

6.1.2 The name of the product shall be qualified by a term descriptive of the presentation in accordance with Sections 2.3.1 to 2.3.4.

6.1.3 If the canned shrimp are labelled as to size, the size shall comply with the provisions of Section 2.3.5 and Annex "B".

6.1.4 Broken shrimp defined in 2.3.3 shall be so labelled.

7. SAMPLING, EXAMINATION AND ANALYSES

7.1 Sampling

(i) Sampling of lots for examination of the final product as prescribed in Section 3.3 shall be in accordance with the FAO/WHO Codex Alimentarius Sampling Plans for Prepackaged Foods (1969) (AQL-6.5) (Ref. CAC/RM 42-1969).

(ii) Sampling of lots for examination of net weight and drained weight shall be carried out in accordance with an appropriate sampling plan meeting the criteria established by the CAC.

7.2 Sensoric and Physical Examination

Samples taken for sensoric and physical examination shall be assessed by persons trained in such examination in accordance with Annex A and the "Code of Practice for the Sensory Evaluation of Fish and Shellfish" (under development).

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 shrimps to drain for two minutes, measured from the time the product is poured into the sieve;

(iv) Weigh the sieve containing the drained shrimps;

(v) The weight of drained shrimps is obtained by subtracting the weight of the sieve from the weight of the sieve and drained product.

7.5 Determination of Size Designation

The size, expressed as the number of shrimp per 100g of drained product, is determined by the following equation:

$$\frac{\text{Number of whole shrimp in unit}}{\text{Actual drained weight of unit}} \times 100 = \#\ \text{shrimp/100g}$$

8. DEFINITION OF DEFECTIVES

A sample unit will be considered defective when it fails to meet any of the following final product requirements referred to in Section 3.3.

8.1 Foreign Matter

The presence in the sample unit of any matter, which has not been derived from shrimp, 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 or 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) Excessive mushy flesh uncharacteristic of the species in the presentation; or

(ii) Excessively tough flesh uncharacteristic of the species in the presentation.

8.4 Discolouration

A sample unit affected by distinct blackening of more than 10% of the surface area of individual shrimp which affects more than 15% of the number of shrimp in the sample unit.

8.5 Objectionable Matter

A sample unit affected by:

(i) struvite crystals - any struvite crystal greater than 5 mm in length.

9. 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 8 does not exceed the acceptance number (c) of the appropriate sampling plan in the Sampling Plans for Prepackaged Foods (AQL-6.5) (CAC/RM 42-1977);

(ii) the total number of sample units not meeting presentation requirements in Section 2.3 does not exceed the acceptance number (c) of the appropriate sampling plan in the Sampling Plans for Prepackaged Foods (AQL-6.5) (CAC/RM 42-1977);

(iii) the average net weight and the average drained weight 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, 5.1, 5.2, and 6 are met.

ANNEX "A"

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 and 7.4.

4. Carefully remove the product and examine for size designation in accordance with the procedure in Section 7.5.

5. Examine product for discolouration, foreign and objectionable matter.

6. Assess odour, flavour and texture in accordance with the "Code of Practice for the Sensory Evaluation of Fish and Shellfish" (under development).

ANNEX "B"

SIZE DESIGNATION OF CANNED SHRIMPS

The terms "extra large", "jumbo", "large", "medium", "small", "tiny" may be used provided that the range is in accordance with the following table:

Number of whole shrimp (including pieces greater than 4 segments) per 100g of drained product

Size Designation	Range
Extra Large or Jumbo	13 or less
Large	14-19
Medium	20-34
Small	35-65
Tiny	more than 65

APPENDIX XIV

DRAFT REVISED STANDARD FOR CANNED TUNA AND BONITO
(CODEX STAN. 70-1981)
(At Step 8 of the Procedure)

1. SCOPE

This standard applies to canned tuna and bonito. It does not apply to speciality products where the fish content constitutes less than 50% m/m of the contents.

2. DESCRIPTION

2.1 Product Definition

Canned Tuna and Bonito are the products consisting of the flesh of any of the appropriate species listed below, packed in hermetically sealed containers.

- *Thunnus alalunga*
- *Thunnus albacares*
- *Thunnus atlanticus*
- *Thunnus obesus*
- *Thunnus maccoyii*
- *Thunnus thynnus*
- *Thunnus tongoe*
- *Euthynnus affinis*
- *Euthynnus alleteratus*
- *Euthynnus lineatus*
- *Katsuwonus pelamis* (syn. *Euthynnus pelamis*)
- *Sarda chilensis*
- *Sarda orientalis*
- *Sarda sarda*

2.2 Process Definition

The products shall have received a processing treatment sufficient to ensure commercial sterility.

2.3 Presentation

The product shall be presented as:

2.3.1 Solid (skin-on or skinless) - fish cut into transverse segments which are placed in the can with the planes of their transverse cut ends parallel to the ends of the can. The proportion of free flakes or chunks shall not exceed 18% of the drained weight of the container.

2.3.2 Chunk - pieces of fish most of which have dimensions of not less than 1.2cm in each direction and in which the original muscle structure is retained. The proportion of pieces of flesh of which the dimensions are less than 1.2 cm shall not exceed 30% of the drained weight of the container.

2.3.3 Flake or flakes - a mixture of particles and pieces of fish most of which have dimensions less than 1.2 cm in each direction but in which the muscular structure of the flesh is retained. The proportion of pieces of flesh of which the dimensions are less than 1.2 cm exceed 30% of the drained weight of the container.

2.3.4 Grated or shredded - a mixture of particles of cooked fish that have been reduced to a uniform size, in which particles are discrete and do not comprise a paste.

2.3.5 Any other presentation shall be permitted provided that it:

2.3.5.1 is sufficiently distinctive from other forms of presentation laid down in this standard;

2.3.5.2 meets all other requirements of this standard;

2.3.5.3 is adequately described on the label to avoid confusing or misleading the consumer.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Raw material

The products shall be prepared from sound fish of the species in sub-section 2.1 and 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 the provisions set out in Section 8. Products shall be examined by the methodes given in Section 7.

4. FOOD ADDITIVES

Only the use of the following additives is permitted.

Additive	Maximum level in the final product
Sodium diphosphate (Syn.: Sodium acid pyrophosphate)	10 g/kg expressed as P_2O_5 (includes natural phosphate)

		Maximum level in the packing medium	
Thickening of jellifying agents (for use in packing medium only):			
- sodium carboxymethylcellulose (CMC)		2.5 g/kg	
- Pectins		2.5 g/kg	
- Agar agar	Singly or in combination	20 g/kg	20 g/kg (total)
- Carrageenan			
- Guar gum			
- Carob bean gum			
- Tragacanth gum			
- Alginic acid as calcium, potassium, sodium salts			
- Xanthan gum			
Modified Starches (Chemically)			
- Acid-treated starches (including white and yellow dextrins)		Singly or in combination 60 g/kg	
- Alkali-treated starches			
- Bleached starches			
- Distarch adipate, acetylated			
- Distarch glycerol			
- Distarch glycerol, acetylated			
- Distarch glycerol, hydroxypropyl			
- Distarch phosphate			
- Distarch phosphate, acetylated			
- Distarch phosphate, hydroxypropyl			
- Monostarch phosphate			
- Oxidized starch			
- Starch acetate			
- Starch, hydroxypropyl			
Acidifying Agents			
- Acetic acid		Limited by Good Manufacturing Practices	
- Citric acid			
- Lactic acid			
Natural Flavours, e.g.		Limited by GMP	
- Spice oils			
- Spice extracts			
Smoke Flavours (natural smoke solutions and their extracts) (*)		Limited by GMP	

(*) Temporarily endorsed

5. HYGIENE AND HANDLING

5.1 The final product shall be free from any foreign material that poses a threat to human health.

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

(i) shall be free from micro-organisms capable of development under normal conditions of storage; and

(ii) no sample unit shall contain histamine that exceeds 20 mg per 100 g; and

(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 CAC; and

(iv) shall be free from container integrity defects which may compromise the hermetic seal.

5.3 It is recommended that the products covered by the provisions of this standard be prepared in accordance with the following codes:

(i) the appropriate sections of the Recommended International Code of Practice - General Principles of Food Hygiene (CAC/RCP 1-1969, Rev. 1);

(ii) the Recommended International Code of Practice for Canned Fish (CAC/RCP 10-1976);

(iii) the Recommended International Code of Hygienic Practice for Low-Acid and Acidified Low-Acid Canned Foods (CAC/RCP 23-1979);

(iv) the Dracft International Code of Hygienic Practice for the Products of Aquaculture (under elaboration, 1994).

6. LABELLING

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

6.1 The Name of the Food

6.1.1 The name of the product as declared on the label shall be "tuna" or "bonito", and may be preceded or followed by the common or usual name of the species, both 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.

6.1.2 The name of the product may be qualified or accompanied by a term descriptive of the colour of the product, provided that the term "white" shall be used only for *Thunnus alalunga* and the terms "light" "dark" and "blend" shall be used only in accordance with any rules of the country in which the product is sold.

6.1.3 Form of Presentation

The form of presentation provided for in Section 2.3 shall be declared in close proximity to the common name.

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

7. SAMPLING, EXAMINATION AND ANALYSES

7.1 Sampling

(i) Sampling of lots for examination of the final product as prescribed in Section 3.3 shall be in accordance with the FAO/WHO Codex Alimentarius Sampling Plans for Prepackaged Foods (1969) (AQL-6.5) (Ref. CAC/RM 42-1977);

(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 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 the procedures set out in Sections 7.3 through 7.5, Annex A and the "Code of Practice for the Sensory Evaluation of Fish and Shellfish" (under development).

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. Determination of Washed Drained Weight (for packs with sauces)

(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 Presentation**

The presentation of all sample units shall be determined by the following procedure.

(i) Open the can and drain the contents, following the procedures outlined in 7.4.

(ii) Remove and place the contents onto a tared 1.2 cm mesh screen equipped with a collecting pan.

(iii) Separate the fish with a spatula being careful not to break the configuration of the pieces. Ensure that the smaller pieces of fish are moved to the top of a mesh opening to allow them to fall through the screen onto the collecting pan.

(iv) Segregate the material on the pan according to flaked, grated (shredded) or paste and weigh the individual portions to establish the weight of each component.

(v) If declared as a "chunk" pack weigh the screen with the fish retained and record the weight. Subtract the weight of the sieve from this weight to establish the weight of solid and chunk fish.

(vi) If declared as "solid" pack remove any small pieces (chunks) from the screen and reweigh. Subtract the weight of the sieve from this weight to establish the weight of "solid" fish.

Calculations

(i) Express the weight of flaked, grated (shredded and paste) as a percentage of the total drained weight of fish.

$$\% \text{ flakes} = \frac{\text{Weight of flakes}}{\text{Total weight of drained fish}} \times 100\%$$

(ii) Calculate the weight of solid and chunk fish retained on the screen by difference and express as a % of the total drained weight of fish.

$$\% \text{ solid \& chunk fish} = \frac{\text{Weight of Solid \& Chunk fish}}{\text{Total Weight of drained fish}} \times 100\%$$

(iii) Calculate the weight of solid fish retained on the screen by difference and express as a % of the total drained weight of the fish.

$$\% \text{ solid fish} = \frac{\text{Weight of solid fish}}{\text{Total weight of drained fish}} \times 100\%$$

7.7. Determination of Histamine

AOAC 977.13 (15th Edition, 1990)[1]

8. DEFINITION OF DEFECTIVES

A sample unit shall be considered defective when it exhibits properties defined below.

8.1 Foreign Matter

The presence in the sample unit of any matter, which has not been derived from fish, 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 practices 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; or

(ii) Excessively tough flesh uncharacteristic of the species in the presentation; or

(iii) Honey-combed flesh in excess of 5% of the drained contents.

8.4 Discolouration

A sample unit affected by distinct discolouration indicative of decomposition or rancidity or by sulphide staining of the meat exceeding 5% of the drained contents.

8.5 Objectionable Matter

A sample unit affected by struvite crystals greater than 5 mm in length.

9. 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 8 does not exceed the acceptance number (c) of the appropriate sampling plan in the Sampling Plans for Prepackaged Foods (AQL-6.5) (CAC/RM 42-1977);

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1 Subject to endorsement by the Codex Committee on Methods of Analysis and Sampling.

(ii) the total number of sample units not meeting the presentation and colour designation as defined in Section 2.3 does not exceed the acceptance number (c) of the appropriate sampling plan in the Sampling Plans for Prepackaged Foods (AQL-6.5) (CAC/RM 42-1977);

(iii) the average net weight or the average weight of drained meat 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 Additive, Hygiene and Labelling requirements of Sections 4, 5.1, 5.2 and 6 are met.

ANNEX "A"

SENSORY AND PHYSICAL EXAMINATION

1. Complete examination of the can exterior 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 and 7.4.

3. Examine the product for discolouration.

4. Carefully remove the product and determine the presentation according to the defined procedures in Section 7.5.

5. Examine product for discolouration, foreign matter and struvite crystals. The presence of a hard bone is an indicator of under processing and will require an evaluation for sterility.

6. Assess odour, flavour and texture in accordance with the "Code of Practice for the Sensory Evaluation of Fish and Shellfish" (under development).

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APPENDIX XV

DRAFT REVISED STANDARD FOR SALTED FISH AND DRIED SALTED FISH OF THE GADIDAE FAMILY OF FISHES

(CODEX STAN. 167-1989)

(At Steps 5 and 8 of the Procedure)

1. SCOPE

This standard applies to salted fish and dried salted fish of the Gadidae family which has been fully saturated with salt (Heavy salted) or to salted fish which has been preserved by partial saturation to a salt content not less than 12% by weight of the salted fish which may be offered for consumption without further industrial processing.

2. DESCRIPTION

2.1 Product Definition

Salted fish is the product obtained from fish:

(a) of the species belonging to the family Gadidae; and
(b) which has been bled, gutted, beheaded, split or filleted, washed, salted.
(c) dried salted fish is salted fish which have been dried.

2.2 Process Definition

The product shall be prepared by one of the salting processes defined in 2.2.1 and one or both of the drying processes defined in 2.2.2 and according to the different types of presentation as defined in 2.3.

2.2.1 Salting

(a) Dry Salting (kench curing) is the process of mixing fish with suitable food grade salt and stacking the fish in such a manner that the excess of the resulting brine drains away.

(b) Wet Salting (pickling) is the process whereby fish is mixed with suitable food grade salt and stored in watertight containers under the resultant brine (pickle) which forms by solution of salt in the water extracted from the fish tissue. Brine may be added to the container. The fish is subsequently removed from the container and stacked so that the brine drains away.

(c) Brine Injection is the process for directly injecting brine into the fish flesh and is permitted as a part of the heavy salting process.

2.2.2 Drying

(a) Natural Drying - the fish is dried by exposure to the open air; and

(b) Artificial Drying - the fish is dried in mechanically circulated air, the temperature and humidity of which may be controlled.

2.3 Presentation

2.3.1 **Split fish** - split and with the major length of the anterior of the backbone removed (about two-thirds).

2.3.2 **Split fish with entire backbone** - split with the whole of the backbone not removed.

2.3.3 **Fillet** - is cut from the fresh fish, strips of flesh is cut parallel to the central bone of the fish and from which fins, main bones and sometimes belly flap is removed.

2.3.4 Other presentation: any other presentation of the product shall be permitted provided that it

(i) is sufficiently distinctive from the other forms of presentation laid down in this Standard;

(ii) meets all other requirements of this Standard; and

(iii) is adequately described on the label to avoid confusing or misleading the consumer.

2.3.5 Individual containers shall contain only one form of presentation from only one species of fish.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Fish

Salted fish shall be prepared from sound and wholesome fish, fit for human consumption.

3.2 Salt

Salt used to produce salted fish shall be clean, free from foreign matter and foreign crystals, show no visible signs of contamination with dirt, oil, bilge or other extraneous materials and comply with the requirements laid down in supplement 1 to the Code of Practice for Salted Fish (CAC/RCP 26-1979).

3.3 Final Product

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

4. FOOD ADDITIVES

Only the use of following additives is permitted.

Preservatives	Maximum Level
Sorbic acid or its calcium, sodium, or potassium salts	200 mg/kg of the final singly or in combination, expressed as sorbic acid

5. HYGIENE AND HANDLING

5.1 The final product shall be free from any foreign material that poses a threat to human health.

5.2 When tested by appropriate methods of sampling and examination prescribed by the Codex Alimentarius Commission (CAC), the product:

(i) shall be free from microorganisms or substances originating from microorganisms in amounts which may present a hazard to health in accordance with standards established by the CAC;

(ii) shall not contain any other substance in amounts which may present a hazard to health in accordance with standards established by the CAC.

5.3 It is recommended that the product covered by the provisions of this standard be prepared and handled in accordance with the following Codes:

(i) the appropriate sections of the Recommended International Code of Practice - General Principles of Food Hygiene (CAC/RCP 1-1985, Rev. 2);

(ii) the Recommended International Code of Practice for Fresh Fish (CAC/RCP 9-1976);

(iii) the Recommended International Code of Practice for Frozen Fish (CAC/RCP 16-1978);

(iv) the Recommended International Code of Practice for Salted Fish (CAC/RCP 26-1979).

(v) the Draft International Code of Hygienic Practice for the Products of Aquaculture (under elaboration, 1994)

6. LABELLING

In addition to the provisions of the Codex General Standard for the Labelling of Prepackaged Foods (Ref. No. CODEX STAN 1-1985), the following specific provisions apply:

6.1 The Name of the Food

6.1.1 The name of the food to be declared on the label shall be "salted fish", "wet salted fish" or "salted fillet" "dried salted fish" or "klippfish" or other designations according to the law, custom or practice in the country in which the product is to be distributed. In addition, there shall appear on the label in conjunction with the name of the product, the name of the species of fish from which the product is derived.

6.1.2 For forms of presentation other than those described in 2.3.1 "split fish", the form of presentation shall be declared in conjunction with the name of the product in accordance with sub-section 2.3.2 as appropriate. If the product is produced in accordance with sub-section 2.3.3, the label shall contain in close proximity to the name of the food, such additional words or phrases that will avoid misleading or confusing the consumer.

6.1.3 The term "klippfish" can only be used for dried salted fish which has been prepared from fish which has reached 95% salt saturation prior to drying.

6.1.4 The term "wet salted fish" can only be used for fish fully saturated with salt.

6.2 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 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.

7. SAMPLING, EXAMINATION AND ANALYSES

7.1 Sampling

(i) Sampling of lots for examination of the product shall be in accordance with the FAO/WHO Codex Alimentarius Sampling Plans for Prepackaged Foods (AQL - 6.5) (CAC/RM 42-1969). A sample unit shall be the primary container or where the product is in bulk, the individual fish is the sample unit.

(ii) Sampling for net weight shall be carried out in accordance with the FAO/WHO Sampling Plans for the Determination of Net Weight (under elaboration).

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 procedures elaborated in Annex A and in accordance with the Code of Practice for the Sensory Evaluation of Fish and Shellfish (under development).

7.3 Determination of Net Weight

The net weight (excluding packaging material and excess salt) of each sample unit in the sample lot shall be determined.

7.4 Determination of Salt Content

(To be elaborated)

8. DEFINITION OF DEFECTIVES

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

8.1.1 Foreign Matter

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

8.1.2 Odour

A fish affected by persistent and distinct objectionable odours indicative of decomposition (such as sour, putrid, etc.) or contamination by foreign substances (such as fuel oil, cleaning compounds, etc.).

8.1.3 Pink

Any visible evidence of red halophilic bacteria.

8.1.4 Appearance

Textural breakdown of the flesh which is characterized by extensive cracks on more than 2/3 of the surface area or which has been mutilated, torn or broken through to the extent that the split fish is divided into two or more pieces but still held together by skin.

8.2 The sample unit shall be considered defective when 30% or more of the fish in the sample unit are affected by any of the following defects.

8.2.1 Halophilic Mould (dun)

A fish showing an aggregate area of pronounced halophilic mould clusters on more than 1/3 of the total surface area of the face side.

8.2.2 Liver Stains

A pronounced yellow or yellowish orange discoloration caused by the presence of liver and affecting more than 1/4 of the total surface area of the face of the fish.

8.2.3 Intense Bruising

Any fish showing more than 1/2 of the face of the fish with intense bruising.

8.2.4 Severe Burning

A fish with more than 1/2 of the back (skin side) tacky or sticky due to overheating during drying.

9. 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 8 does not exceed the acceptance number (c) of the appropriate sampling plan in the Sampling Plans for Prepackaged Foods (AQL-6.5) (CAC/RM 42-1969);

(ii) the average net weight of all sample units is not less than the declared weight, provided no individual container is less than 95% of the declared weight; and

(iii) the total number of sample units not meeting the form of presentation as defined in section 2.3 does not exceed the acceptance number (c) of the appropriate sampling plan in the Sampling Plans for prepackaged Foods (AQL - 6.5) (CAC/RM 42-1969);

(iv) the Food Additives, Hygiene and Handling and Labelling requirements of Sections 4, 5.1, 5.2 and 6 are met.

"ANNEX A"

SENSORY AND PHYSICAL EXAMINATION

1. Examine every fish in the sample in its entirety.

2. Examine the product for the form of presentation.

3. Examine the fish for foreign matter, pink conditions, halophilic mould, liver stains, intense bruising, severe burning and texture.

4. Assess odour in accordance with the "Code of Practice for the Sensory Evaluation of Fish and Shellfish" (under development).