PHILIPPINE NATIONAL STANDARD

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Quick frozen finfish, uneviscerated and eviscerated

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Foreword

The Philippine National Standard (PNS) for Quick Frozen Finfish, Uneviscerated and Eviscerated was adopted from the existing international Codex Standard for Quick Frozen Finfish, Uneviscerated and Eviscerated (CODEX STAN 36-1981, Rev. 1-1995). Modifications were made from the Codex Standard in order to tailor fit the standard to Philippines requirements, particularly on the formatting and definition of terms.

A memorandum was circulated requesting comments from responsible agencies and competent authorities for the finalization of the draft PNS. Accordingly, relevant comments and inputs were included in the standard.

The PNS for Quick Frozen Finfish, Uneviscerated and Eviscerated aims to provide common understanding on the scope of the standard, product description, essential composition and quality factors, food additives, hygiene and handling, product presentation, packaging and labeling requirements, and methods of sampling, examination and analyses, definition of defectives and the requirements for product lot acceptance.

1 Scope

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

2 References

The titles of the standards publications referred to in this standard are listed on the inside back cover.

3 Definition of terms

For the purpose of the standard, the following terms shall mean:

3.1
dehydration
the loss of moisture from the frozen product through evaporation.

3.2
eviscerated
having at least the gut and all the internal organs removed.

3.3
finfish
a term used to separate true fish from shellfish, crayfish, and jellyfish. True fishes, those poikilothermic vertebrates breathing by gills throughout life and having limbs, if any, in the form of fins. Used to indicate true fishes in the context where the word fish is applied in its broad sense to cover aquatic animals such as whales, crustaceans and mollusks.

3.4
freezing
a process which is carried out in appropriate equipment in which the initial temperature of the product is reduced to -18ºC or lower with most of the tissue water turning into ice. The process shall not be regarded as complete unless and until the product temperatures has reached -18°C (0°F) or lower at the thermal centre after thermal stabilization.

3.4.1
quick freezing
a freezing rate at which no part of the fish takes more than two hours to cool from -1°C to -5°C, which further reduction of the temperature at the end of the freezing period to the recommended cold storage temperature.

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

3.5
food
any substance, whether processed or semi-processed or raw which is intended for human consumption including beverages, chewing gum and any substance, which has been used as an ingredient on the manufacture, preparation or treatment of food.

3.6
food additive
substances other than the basic food stuff present in the food as a result of any aspect of production, processing, storage or packaging but do not include chance contaminants.

3.7
frozen fish
fish, which have been subjected to a freezing process sufficient to reduce the temperature of the product to -18^{o}C (0^{o}F) or lower to preserve its quality and maintained at this temperature.

3.8
glazing
a process in which thin protective layer of ice is allowed to form on the surface of the frozen by spraying it with, or dipping it in potable water at 0^{o}C, in order to prevent dehydration and oxidation of said product.

3.9
histamine
a biogenic amine common in scombroid species (e.g. tuna and tuna-like species) resulting from the decarboxylation of the amino acid histidine which may cause allergic reactions or poisoning to consumers.

3.10
ingredient
any substance including food additive, used as a component in the manufacture or preparation of a food and present in the final product in its original or modified form.

3.11
retail
an operation that stores, prepares, packages, serves, or otherwise provides fish, shellfish and their products directly to the consumer for preparation by the consumer for human consumption. This may be free standing seafood markets, seafood sections in grocery or department stores, packaged chilled or frozen and/ or full service.

4 Description

4.1 Product definition

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

4.2 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. Glazing may be applied for products intended for prolonged storage to minimize dehydration and oxidation. The products shall be kept under cold storage to maintain the quality during transportation, and distribution.

5 Essential composition and quality factors

5.1 Fish

Quick frozen finfish shall be prepared from best quality fish, which are fit to be sold fresh for human consumption.

5.2 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.

5.3 Other ingredients

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

5.4 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.

5.5 Final product

5.5.1 Products shall meet the requirements of this standard when lots examined in accordance with Section 11, and comply with the provisions set out in Section 10. Products shall be examined by the methods given in Section 9.

5.5.2 The final product shall conform to the following microbiological characteristics in Table 1:

Table 1 – Microbiological characteristics

Microbiological parameter	Limit
1. Aerobic Plate Count (APC)	500,000 /g
2. *Escherichia coli*	11/g
3. *Salmonella*	Absent in 25 g
4. *Shigella*	Absent
5. *Staphylococcus aureus*	1,000 /g
6. *Vibrio Cholera*	Absent

6 Food additives

Only the use of the following additives is permitted.

Additive	**Maximum level in the final product**
Antioxidants	
300 Ascorbic acid	GMP
301 Sodium ascorbate	GMP
303 Potassium ascorbate	GMP

7 Hygiene and handling

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

7.2 When tested by appropriate methods of sampling and examination prescribed by the Codex Alimentarius Commission, the product:

(i) shall be free from microorganisms or substances originating from microorganisms in amounts which may pose a hazard to health in accordance with standards established by the Codex Alimentarius Commission;

(ii) shall not contain histamine that exceeds 10 mg/100 g. This applies only to species of *Clupeidae, Scombridae, Scombresocidae, Pomatomidae* and *Coryphaenedae* families; and

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

7.3 It is recommended that the product covered by the provisions of this standard be prepared and handled in accordance with the appropriate sections of the Recommended International Code of Practice ï General Principles of Food Hygiene (CAC/RCP 1-1969, Rev. 3-1997) and the following relevant Codes:

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

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

(iii) The Recommended International Code of Practice for Fish and Fishery Products (CAC/RCP 52-2003, Rev. 2-2005).

8 Presentation, packaging and labeling

8.1 Product presentation

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

8.1.1 meets all requirements of this standard; and

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

8.2 Packaging

The product shall be packed in a food grade packaging materials either vacuum pack or ordinary Polyethylene (PE) bags made of suitable film or laminates, which are clean and free from any foreign matters or contaminants. The frozen finfish products shall be packed by count per unit of weight or per package.

8.3 Labeling

In addition to the provisions of the Codex General Standard for the Labeling of Prepackaged Foods (CODEX STAN 1-1985, Rev. 3-1999) the following specific provisions apply:

8.3.1 Labeling of retail packages/containers

8.3.1.1 The name of the product

(i) 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". The name of the product as declared on the label shall be according to the law, custom or practice in the country.

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

(iii) 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 4.2 of this standard.

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

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

8.3.1.2 Net contents (glazed products)

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

8.3.1.3 Storage instructions

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

8.3.1.4 The words ñbest beforeò followed by the date, month and year indicating end of the period at which the product shall retain its optimum quality attributes at a stated storage condition.

8.3.1.5 The label shall indicate the name ñProduct of the Philippinesò

8.3.2 Labeling 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, the 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.

9 Sampling, examination and analyses

9.1 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.

9.2 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 9.3, 9.4 and 8.5, Annex A and the *Guidelines for the Sensory Evaluation of Fish and Shellfish in Laboratories (CAC/GL 31 - 1999)*

9.3 Determination of net weight

9.3.1 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.

9.3.2 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 weigh the product in a tare pan.

9.4 Procedure for the detection of parasites (Type 1 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.

9.5 Thawing

9.5.1 Air thaw method

Frozen fish are removed from the packaging. The frozen fish 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 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 fish temperature should not exceed 7°C (44.6°F).

9.5.2 Water immersion method

Frozen fish are removed from the packaging. The frozen fish are sealed in plastic bags. Remove as much air as possible from the bags and seal. The frozen fish are placed into a circulating water bath with temperatures maintained at 21°C $\pm$ 1.5°C (70°C $\pm$ 3°F). Thawing is completed when the product can be easily separated without tearing. Internal fish temperature should not exceed 7°C (44.6°F).

9.6 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.

9.7 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 product should be determined by prior experimentation.

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

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

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

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

9.8 Determination of histamine

AOAC 977.13 (15th Edition, 1990).

10 Definition of defectives

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

10.1 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 color 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.

10.2 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.

10.3 Parasites

The presence of two or more parasites per kilogram of the sample unit detected by the method described in Section 8.4 with a capsular diameter greater than 3 mm or a parasite not encapsulated and greater than 10 mm in length.

10.4 Odor and flavor

A sample unit affected by persistent and distinct objectionable odors or flavors indicative of decomposition or of feed.

10.5 Texture

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.

10.6 Flesh abnormalities

A sample unit affected by excessive gelatinous condition of the flesh together with greater than 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.

10.7 Belly burst

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

11. Lot acceptance

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

(i) the total number of ñdefectivesò as classified according to Section 10 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 containers examined is not less than the declared weight, provided there is no unreasonable shortage in any container; and

(iii) the Food Additives, Hygiene and Labeling requirements of Sections 6, 7 and 8.3 are met.

Annex A

Sensory and physical examination

1. Complete net weight determination according to defined procedures in Section 9.3 (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, parasites, bone where applicable, odor, and flesh abnormality defects.

4. Examine each fish using the criteria outlined in Section 10. Flesh odors 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 odor or texture can not be made in the thawed uncooked state, a small portion of the disputed material (approximately 200 g) is sectioned from the sample unit and the odor, flavor or texture confirmed without delay by using one of the cooking methods defined in Section 9.6.

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 9.7 or by using the procedure in Section 9.6 to determine if greater than 86% moisture is present in any fish. If a cooking evaluation is inconclusive, then the procedure in 9.6 shall be used to make the exact determination of moisture content.

References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

DA BFAR, 2001. Fisheries Administrative Order No. 210. Rules and Regulations on the Exportation of Fresh, Chilled and Frozen Fish and Fishery/Aquatic Products. Diliman, Quezon City. Department of Agriculture, Bureau of Fisheries and Aquatic Resources.

FAO/WHO CODEX STAN 36-1981, Rev. 1 ï 1995. Codex Standard for Quick Frozen Finfish, Uneviscerated and Eviscerated. Rome, Italy. Food and Agriculture Organization/World Health Organization Codex Alimentarius Commission.

International Commission on Microbiological Specifications for Food (ICMSF), 1986.

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