

# PHILIPPINE NATIONAL STANDARD

PNS/BAFPS 90:2011  
ICS 67.120.30

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Quick frozen fish fillets



**BUREAU OF PRODUCT STANDARDS**

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## **Foreword**

The Philippine National Standard (PNS) for Quick frozen fish fillets was adopted from the existing international Codex Standard for Quick Frozen Fish Fillets (CODEX STAN 190-1995).

To tailor fit the standard to the Philippines' requirements, modifications were made in the format and definition of terms. An electronic solicitation of comments and a stakeholders' consultative meeting were conducted by the Bureau of Agriculture and Fisheries Product Standards (BAFPS) in collaboration with the Bureau of Fisheries and Aquatic Resources (BFAR) on February-March, 2010 and July 28, 2010 (Quezon City), respectively. Subsequently, relevant and substantial comments solicited from concerned and competent agencies, and industry-stakeholders were also incorporated in the PNS.

The PNS for Quick frozen fish fillets aims to provide a common understanding on the scope of the standard, product description, essential composition and quality factors, food additives, hygiene and handling, labelling requirements, methods of sampling, examination and analyses, definition of defectives, and the requirements for product lot acceptance.

**Quick frozen fish fillets**

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**1 Scope**

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

**2 References**

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

**3 Definition of terms**

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

**3.1****clean sea-water**

sea-water which meets the same microbiological standards as potable water and is free from objectionable substances

**3.2****contaminant**

any substance not intentionally added to food, which is present in such food as a result of the production (including operations carried out in crop husbandry, animal husbandry and veterinary medicine), manufacture, processing, preparation, treatment, packing, packaging, transport or holding of such food or as a result of environmental contamination. The term does not include insect fragments, rodent hairs and other extraneous matter

**3.3****dehydration**

is the loss of moisture from frozen products through evaporation. This may occur if the products are not properly glazed, packaged or stored. Deep dehydration adversely affects the appearance and surface texture of the product and is commonly known as "freezer burn"

**3.4****freezing process**

is a process which is carried out in appropriate equipment in such a way that the range of temperature of maximum crystallisation is passed quickly. The quick freezing process shall not be regarded as complete unless and until the product temperature has reached  $-18\text{ }^{\circ}\text{C}$  ( $0\text{ }^{\circ}\text{F}$ ) or lower at the thermal centre after thermal stabilisation

**3.5**

**fillet**

is a slice of fish of irregular size and shape removed from the carcass by cuts made parallel to the backbone

**3.6**

**food additive**

any substance not normally consumed as a food by itself and not normally used as a typical ingredient of the food, whether or not it has nutritive value, the intentional addition of which to food for a technological (including organoleptic) purpose in the manufacture, processing, preparation, treatment, packing, packaging, transport or holding of such food results, or may be reasonably expected to result (directly or indirectly), in it or its by products becoming a component of or otherwise affecting the characteristics of such foods. The term does not include contaminants or substances added to food for maintaining or improving nutritional qualities

**3.7**

**glazing**

the application of a protective layer of ice formed at the surface of a frozen product, done by spraying with or dipping it into clean seawater, potable water, or potable water with approved additives, as appropriate

**3.8**

**ingredient**

any substance, including a food additive, used in the manufacture or preparation of a food and present in the final product although possibly in a modified form

**3.9**

**label**

any tag, brand, mark, pictorial or other descriptive matter, written, printed, stencilled, marked, embossed or impressed on, or attached to, a container of food

**3.10**

**lot**

a definitive quantity of a commodity produced essentially under the same conditions

**3.11**

**potable water**

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"

**3.12**

**retail**

an operation that stores, prepares, packs, serves, or otherwise provides fish, shellfish and their products directly to the consumer, who prepares them for human consumption. This may be free standing seafood markets, seafood sections in groceries or department stores. Products sold may be packaged chilled or frozen and/or full service

### **3.13**

#### **quick-frozen**

used of food; preserved by freezing sufficiently rapidly to retain flavor and nutritional value or the inherent quality of the product

## **4 Description**

### **4.1 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 4.2.

### **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  $-18^{\circ}\text{C}$  ( $0^{\circ}\text{F}$ ) 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.

### **4.3 Presentation**

**4.3.1** 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.

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

## **5 Essential composition and quality factors**

### **5.1 Fish**

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

## 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 freshwater 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 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 standards.

## 5.4 Decomposition

The products shall not contain more than 20 mg/100 g of histamine based on the average of the sample unit tested. This shall apply only to species of *Clupeidae*, *Scombridae*, *Scomberesocidae*, *Pomatomidae* and *Coryphaenidae* families.

## 5.5 Final product

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

## 6 Food additives

<b>Additive</b>	<b>Maximum level in the final product</b>
<b><u>Moisture/Water retention agents</u></b>	
339(i) Monosodium orthophosphate 340(i) Monopotassium orthophosphate 450(iii) Tetrasodium diphosphate 450(v) Tetrapotassium diphosphate 451(i) Pentasodium triphosphate 451(ii) Pentapotassium triphosphate 452(i) Sodium polyphosphate 452(iv) Calcium, polyphosphates	10 g/kg expressed as P <sub>2</sub> O <sub>5</sub> singly or in combination (includes natural phosphate)
401 Sodium alginate	5000 mg/kg
<b><u>Antioxidants</u></b>	
301 Sodium ascorbate	1000 mg/kg
303 Potassium ascorbate	1000 mg/kg

## 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 present a hazard to health in accordance with standards established by the Codex Alimentarius Commission;
- (ii) shall not contain histamine that exceeds 20 mg/100 g. This applies only to species of Clupeidae, Scombridae, Scomberesocidae, Pomatomidae and Coryphaenidae families;
- (ii) shall not contain any other substance in amounts which may present 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 - General Principles of Food Hygiene (CAC/RCP 1-1969, Rev. 4-2003) and the following relevant Codes:

- (i) the Recommended International Code of Practice for Frozen Fish (CAC/RCP 16-1978);
- (ii) The Recommended International Code of Practice for the Processing and Handling of Quick Frozen Foods (CAC/RCP 8-1976, Rev. 3-2008); and
- (iii) The sections on the Products of Aquaculture in the Code of Practice for Fish and Fishery Products (CAC/RCP 52-2003, Rev. 5-2010).

## **8 Labelling**

In addition to the General Standard for the Labelling of Prepackaged Foods (CODEX STAN 1-1985, Amend. 7-2010), the following specific provisions apply:

### **8.1 Name of the product**

**8.1.1** 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.

**8.1.2** 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.

**8.1.3** 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 4.2 of this standard.

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

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

## **8.2 Net contents (glazed products)**

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

## **8.3 Storage instructions**

The label shall include terms to indicate that the product shall be stored at a temperature of -18 °C (0 °F) or colder.

**8.4** The words “best before” 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.

**8.5** The name and the address of the manufacturer, packer, distributor, importer or exporter or vendor of the food.

**8.6** The label shall indicate the name “Product of the Philippines”.

## **8.7 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.

## **9 Sampling, examination and analyses**

### **9.1 Sampling**

- (i) Sampling of lots for examination of the product shall be in accordance with an appropriate sampling plan with an AQL of 6.5. 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 Codex Alimentarius Commission.



## 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 9.3 through 9.7, 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** 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 weight the product in a tared pan.

## 9.4 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.

## 9.5 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.

## 9.6 Cooking methods

The following procedures are based on heating the product to an internal temperature of 65 °C - 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.

## 9.7 Determination of histamine

AOAC 977.13.

## 10 Definition of defectives

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

### 10.1 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 <sup>2</sup>
b) 201 - 500 g units	≥ 50 cm <sup>2</sup>
c) 501 - 5000 g units	≥ 150 cm <sup>2</sup>

### 10.2 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.

### 10.3 Parasites

The presence of two or more parasites per kg of the sample unit detected by the method described in 9.4 with a capsular diameter greater than 3 mm or a parasite not encapsulated and greater than 10 mm in length.

### 10.4 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.

### **10.5 Odour and flavour**

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

### **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 fillet or a sample unit with pasty texture resulting from parasitic infestation affecting more than 5 % of the sample unit by weight.

## **11 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 clause 10 does not exceed the acceptance number (c) of an appropriate sampling plan with an AQL of 6.5;
- (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 clauses 6, 7 and 8 are met.

## Annex A

### Sensory and physical examination

1. Complete net weight determination, according to defined procedures in 9.3 (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 state, 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 9.6.
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 9.6 or by using the procedure in 9.5 to determine if greater than 86 % moisture is present in any fillet. If a cooking evaluation is inconclusive, then the procedure in 9.5 would be used to make the exact determination of moisture content.

## References

**PNS/BAFPS 90:2011**

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.

BFAD Bureau Circular No. 2006-0016. Updated List of Food Additives. Bureau of Food and Drugs. Department of Health. Philippines.

CAC/GL 31-1999. Guidelines for the Sensory Evaluation of Fish and Shellfish in Laboratories. Food and Agriculture Organization/World Health Organization. Codex Alimentarius Commission. Rome, Italy.

CAC/RCP 52-2003, Rev.5-2010. Code of Practice for Fish and Fishery Products. Food and Agriculture Organization/World Health Organization. Codex Alimentarius Commission. Rome, Italy.

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CODEX/STAN 1-1985, Amend. 7-2010. Codex General Standard for the Labelling of Prepackaged Foods. Food and Agriculture Organization/World Health Organization. Codex Alimentarius Commission. Rome, Italy.

FAO/WHO 2009. Procedural Manual, 18<sup>th</sup> Ed. Joint Food and Agriculture Organization/World Health Organization Food Standards Programme. Codex Alimentarius Commission. Rome, Italy.

FDA Regulation No. 001 s. 1982. Guidelines for Open-Date Marking of Pre-packaged Foods. Food and Drugs Administration. Department of Health. Philippines.

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