

PHILIPPINE NATIONAL STANDARD

PNS/BAFPS 70:2008
ICS 67.120.30

Quick frozen shrimps or prawns



BUREAU OF PRODUCT STANDARDS

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Foreword

The Philippine National Standard (PNS) for Quick frozen shrimps or prawns was adopted from the existing international Codex Standard for Quick Frozen Shrimps or Prawns (CODEX STAN 92-1981, 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 shrimps or prawns aims to provide common understanding on the scope of the standard, product description, essential composition and quality factors, food additives, definition of defectives, hygiene and handling, product presentation, packaging and labeling requirements, and methods of sampling, examination and analyses and the requirements for product lot acceptance.

Quick frozen shrimps or prawns

1 Scope

This standard applies to quick frozen raw or partially or fully cooked shrimps or prawns¹, peeled or unpeeled.

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 this standard, the following terms shall mean:

3.1**dehydration**

is the loss of moisture from the frozen product through evaporation

3.2**freezing**

is a process which is carried out in appropriate equipment in which the initial temperature of the product is reduced to -18 °C 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

3.2.1**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

3.3**food**

is 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

3.4**glazing**

a process in which thin protective layer of ice is allowed to form on the surface of the frozen product by spraying/brushing it with, or dipping it in potable water at 0 °C, to prevent dehydration and oxidation of the product

¹ Hereafter referred to as shrimp

3.5

ingredient

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

3.6

quick-frozen

used of food; preserved by freezing sufficiently rapidly to retain flavor and nutritional value

3.7

retail

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

4 Description

4.1 Product definition

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

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

4.1.2 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.

4.2 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.

5 Essential composition and quality factors

5.1 Shrimp

Quick frozen shrimp shall be prepared from fresh or good quality shrimp, 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 standards.

5.4 Final product

5.4.1 Products shall meet the requirements of the standards when lots examined in accordance with Clause 10 comply with the provisions set out in Clause 9. Products shall be examined by the methods given in Clause 8.

5.4.2 The final product shall conform to the following microbiological characteristics in Tables 1.

Table 1 – Microbiological characteristics

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

6 Food additives

Only the use of the following additives is permitted.

<u>Additive</u>	<u>Maximum level in the final product</u>
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Acidity regulators

330	Critic Acid	GMP
450(iii)	Tetrasodium diphosphate	10 g/kg expressed as
450(v)	Tetrapotassium diphosphate	P ₂ O ₅ , singly or in
451(i)	Pentasodium triphosphate	combination (includes
45(ii)	Pentapotassium triphosphate	natural phosphate)

Antioxidants

300	Ascorbic acid (L-)	GMP
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Colors

124	Ponceau 4R	30 mg/kg in heat-treated products only
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Preservatives

221	Sodium sulphite	100 mg/kg in the edible part of the raw product, or 30 mg/kg in the edible part of the cooked product, singly or in combination, expressed as SO ₂
223	Sodium metabisulphite	
224	Potassium metabisulphite	
225	Potassium sulphite	

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 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 products 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) 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 Frozen Shrimps or Prawns (CAC/RCP 17-1978 and Supplement November 1989);
- (iii) the Recommended International Code of Practice for the Processing and Handling of Quick Frozen Foods (CAC/RCP 8-1976); and
- (iv) The sections on the Products of Aquaculture in Code of Practice for Fish and Fishery Products (CAC/RCP 52 – 2003, Rev. 2 – 2005).

8 Presentation, packaging and labeling

8.1 Product presentation

8.1.1 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.

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

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), the following specific provisions apply:

8.3.1 Labeling of retail packages/containers

8.3.1.1 The name of the product

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 products to be distributed.

- (i) 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.
- (ii) In addition to the specified labeling 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.
- (iii) Products shall be designated as cooked, or partially cooked, or raw as appropriate.
- (iv) If the product has been glazed with sea-water, a statement to this effect shall be made.
- (v) 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 3.2 of this standard.
- (vi) The label shall state that the product should be maintained under conditions that will maintain the good quality during transportation, storage and distribution.

8.3.1.2 Net contents (Glazed products)

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

8.3.1.3 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 "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.

8.3.1.5 The label shall indicate the name "Product of the Philippines".

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 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.

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) (CODEX STAN 233-1969). 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 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 8.3 through 8.6, 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

9.3.2.1 Procedure

- a) Open the package with quick frozen shrimps or prawns immediately after removal from low temperature storage.
 - (i) For the raw product, place the contents in a container into which fresh water at room temperature is introduced from the bottom at a flow of approximately 25 liters per minute.
 - (ii) For the cooked product 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 melted. If the product is block frozen, turn block over several times during thawing. The point at which thawing is complete can be determined by gently probing the block apart.
- b) 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 (US No. 8 Standard Screen).

- (i) 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).
- (ii) 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).
- c) After all glaze that can be seen or felt has been removed and the shrimps or prawns 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.
- d) Weigh the sieve containing the drained product. Subtract the mass of the sieve; the resultant figure shall be considered to be the net content of the package.

9.4 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.

9.5 Procedure 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.

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 temperature used. The exact times and conditions of cooking for the product should be determined by prior experimentation.

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

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

9.6.3 Boil-in-bag procedure – Place the product into a boilable film-type pouch and seal. Immerse the pouch into boiling water and cook.

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

10 Definition of defectives

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

10.1 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 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 shrimp.

10.2 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.

10.3 Odor/Flavor

Shrimp affected by persistent and distinct objectionable odors or flavors indicative of decomposition or rancidity or of feed.

10.4 Discoloration

Distinct blackening (melanosis) 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.

11 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 Clause 10 does not exceed the acceptance number (c) of the appropriate sampling plan in the Sampling Plans for Prepackaged Foods (AQL-6.5) (CODEX STAN 233-1969);
- (ii) the total number of sample units not meeting the count designation as defined in 8.1 does not exceed the acceptance number (c) of the appropriate sampling plan in the Sampling Plans for Prepackaged Foods (AQL - 6.5) (CODEX STAN 233-1969);
- (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; and
- (iv) the Food Additives, Hygiene and Labeling requirements of Clauses 6, 7 and 8.3 are met.

Annex A

Sensory and physical examination

1. Complete net weight determination according to defined procedures in 8.3 (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 the shrimps using the procedure described in 8.5 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 8. 4.
5. Assess the shrimp for odor and discoloration as required.
6. In cases where a final decision regarding the odor/flavor 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 odor/flavor confirmed by using one of the cooking methods defined in 8.6.

References

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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. Department of Agriculture, Bureau of Fisheries and Aquatic Resources. Diliman, Quezon City.

FAO/WHO CODEX STAN 92 – 1981, Rev. 1 – 1995. Codex Standard for Quick Frozen Shrimps or Prawns. Food and Agriculture Organization/World Health Organization Codex Alimentarius Commission. Rome, Italy.

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

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