1 Scope

This standard applies to Milkfish (*Chanos chanos*, Forskal) prepared and marketed chilled or frozen, intended for human consumption. The product can be presented in the following forms:

(i) whole
(ii) Whole-gutted
(iii) Fresh deboned (seasoned and unseasoned)
(iv) Choice cuts (seasoned and unseasoned)

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 Chilling refers to the process of cooling fish and shellfish to a temperature of 0^0C-4^0C approaching that of melting ice *(BAFS/PNS 138:2014 – Philippine National Standard for Fresh-chilled, Fresh-frozen and Treated Tuna)*

3.2 Contaminant refers to any biological or chemical agent, foreign matter, or other substances not intentionally added to food which may compromise food safety or suitability *(BAFS/PNS 138:2014)*

3.3 Deboning process refers to the process of removing most of the intermuscular bones / spines from the fish. It is done by splitting and cutting the milkfish along the dorsal side, spreading and removing the gut. It is washed in cold, clean water and deboned by means of hand with the use of forceps and knives and individually checked to ensure that only 2 pieces of the total number of bones in the body and anal fin may be allowed

3.4 Eviscerated refers to having all the internal organs removed *(BAFS/PNS 138:2014)*

3.5 Freezer burn refers to the loss of moisture from frozen products through evaporation. This may occur if the products are not properly glazed, packaged or stored *(BAFS/PNS 138:2014)*

3.6 Freezing refers to a process that is carried out in appropriate equipment in which the initial temperature of the product is reduced to -18^0C or lower with most of the issue water turning into ice. The process shall not be regarded complete unless and until the product temperature has reached -18^0C or lower at the thermal center after thermal stabilization

3.7 Food additive refers to any substances other than the basic food stuff present in the food as a result of any aspect of production, processing, storage or packaging but not include chance contaminants

3.8 Glazing refers to 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 *(BAFS/PNS 138:2014)*

3.9 Potable water refers to water suitable (both health and acceptability considerations) for drinking and cooking purposes *(BAFS/PNS 138:2014)*

3.10 Veterinary Drugs refers to chemical substances used to alter the state or condition of the fish and/or the culture medium *(FAO 214)*

4 Description

4.1 Product definition

The products are fresh-chilled and fresh-frozen milkfish prepared and presented either in the following forms:

a) whole
b) whole, gutted
c) deboned
d) choice cuts such as:
   - Fillet
   - belly
   - head-and-tail

4.2 Process definition

Properly cultured milkfish, prepared into forms as defined in Section 4.1; and subjected to any of the processing methods described below:

4.2.1 Fresh-chilled

Rapid cooling and chilling should be applied to fish throughout the handling process.

a) Fresh whole and whole-gutted milkfish, cleaned/washed with potable water, handled in accordance to hygienic practices and immediately chilled at temperature of 0 to4^{0}C.

b) Fresh deboned milkfish (seasoned and unseasoned), prepared in accordance to deboning process as defined in Section 3.4, and immediately chilled at temperature of 0-4^{0}C.

c) Choice cuts are subjected to immediate chilling temperature of 0-4^{0}C using appropriate methods (e.g. direct icing and other forms of refrigeration).

4.2.2 Fresh-Frozen

Milkfish subjected to pre-chilling after harvest, prepared into different forms and frozen to a core of temperature of -18^{0}C or lower, using appropriate freezing method and then stored at temperature of -18^{0}C or lower.

5 Essential composition and quality factors

5.1 Raw Material

The product shall be prepared from fresh and wholesome milkfish which are fit for human consumption.

5.2 Water

Water for washing, cleaning, glazing and cooling shall be potable as defined in section 3.10.

5.3 Final product

5.3.1 The final product shall meet the requirements of this standard when lots examined in accordance with Section 12-Lot Acceptance and comply with the provisions set out in Section 11-Definition of Defectives. Products shall be examined by the methods given in Section 10-Method of Sampling, examination and analysis.

5.3.2 The products shall not contain more than 200 mg/kg of histamine based on the average of the sample unit tested.

5.3.3. The final product shall possess the following size characteristics:

Table 1 – Size classification of fresh whole milkfish

Size	Weight range (g)
Small	200-299
Medium	300-499
Large	500-699
Extra Large/jumbo	>700

Table 2 – Size classification of deboned milkfish

Size	Weight range (g*)
Small	120-150
Medium	151 – 186
Large	187 – 225
Extra Large/Jumbo	>350
* Recovery rate calculated at 75% or higher	

5.3.4 The final product shall conform to the following microbiological safety requirements in Table 3:

Table 3 – Microbiological safety requirements

Test/Microorganism	n	c	m	M
E. coli, MPN/g	5	2	11	500
Staphylococcus aureus (coagulase +), cfu/g	5	2	10^3	10^4
Vibrio parahaemolyticus, cfu/g	5	2	10^2	10^3
Salmonella/25 g	5	0	0	-
Shigella/25g	5	0	0	-
Aerobic Plate Count (APC)/Standard Plate Count (SPC), cfu/g	5	3	$5x10^5$	10^5

Legend: **n** -number of sample units selected from a lot of food to be examined
c -maximum allowable number of defective or marginally acceptable units
m -acceptable level of microorganism determined by a specified method; the values are generally based on levels that are achievable under GMP
M -level which when exceeded in one or more samples would cause the lot to be rejected as this indicates potential health hazard or imminent spoilage
cfu - colony forming unit
MPN-most probable number

Source: a. *PNS for Fresh-chilled, Fresh-frozen and Treated Tuna (BAFS/PNS 138:2014)*
b. *DOH-FDA Circular No. 2013-010, Revised Guidelines for the Assessment of Microbiological Quality of Processed Foods, Table 11. Fish and Fish Products: Fresh Frozen Fish.*

5.3.5 The final product shall meet the quality characteristics in Table 4.

Table 4 – Quality characteristics of Milkfish

Product Form	Quality characteristics	
	Appearance/Texture	**Odor**
Whole	- No visible lesions - Complete fins - No deformity - Bright silvery gray - -red gills	- Absence of muddy or algae-like odor and flavor
Whole, gutted	- Bright silvery gray in color - fins intact - Flesh intact/firm texture - Eyes clear not sunken	- Absence of muddy or algae-like odor and flavor
Fresh deboned	- Bright silvery gray in color -white to off-white meat -intact belly -absence of blood spots	- Absence of muddy or algae-like odor and flavor
Choice cuts	- white to off-white meat	- Absence of muddy or algae-like odor and flavor

	- Muscle block intact	

6 Food additives

Food additives shall not be allowed in this product.
-acceptable additives for deboned (seasoned)

7 Contaminants

The products shall comply with the acceptable level of contaminants as specified in Table 4.

Table 5 – Acceptable levels of heavy metals and veterinary drugs in fish

Heavy metal	**MRPL (mg/kg)**
Cadmium	0.5
Lead	0.3
Total Mercury	0.5
Veterinary Drug	MRPL (ppb)
Oxytetracycline[1]	200 μg /kg

Legend: ppm= parts per million
ppb= parts per billion
MRL= Maximum Residue Limit
MRPL= Maximum Reportable Performance Limit

Note: FAO prohibits the use of specified banned veterinary drugs

Sources:
1 DA-BFAR Fisheries Office Order No 313, s. 2006. Amendments to the Supplemental Requirements on Quality Standards for the Exportation of Fresh, Chilled and Frozen Fish and Fishery/Aquatic Products
2 DA-BFAR Fisheries Administrative Order No. 210 s. 2001. Rules and Regulation on the exportations of fresh, chilled and frozen fish and fishery/aquatic products
3 CODEX STAN 193-1995 (Codex General Standard for Contaminants and Toxins in Food and Feed)

8 Hygiene and handling

The products shall be prepared and processed under hygienic conditions in accordance with the Revised Guidelines on Current Good Manufacturing Practice in Manufacturing, Packing, Repacking, or Holding Food (DOH AO No. 153 s. 2004) and its future amendments, and the following recommended codes of practice:

[1] Applies only to muscle tissue

a) General Principles of Food Hygiene (CAC/RCP 1-1969); and

b) Code of Practice for Fish and Fishery Products (CAC/RCP 52-2003).

9 Presentation, packaging and labeling

9.1 Presentation

9.1.1 The products shall be presented as fresh-chilled or fresh-frozen whole, whole-gutted, deboned (seasoned and unseasoned) and choice cuts milkfish.

9.1.2 Individual retail or bulk container shall have only one species of fish, which are relatively uniform in size.

9.2 Packaging

The product shall be packed in food-grade packaging materials which are clean and free from any foreign matter or contaminant.

9.3 Labeling

The product shall be labeled according to the provisions of the Codex General Standard for the Labeling of Prepackaged Foods (CODEX STAN 1-1985) and its future amendments.

9.3.1 Retail package/container

Each retail product package shall be labeled and marked with the following information:

a. The name of the product shall be "Fresh-chilled" or "Fresh-frozen followed by corresponding English or common/local name with its scientific name in parenthesis, e.g. "Fresh-chilled Milkfish" (*Chanos chanos)* or "Fresh-Chilled *Bangus*" (*Chanos chanos)*. The products may be called by other common/local names provided that such names are accepted in the place/ country of distribution;

b. The net content by weight in metric system and/or number of pieces per pack. The net weight based on other systems of measurement required by importing countries shall appear in parenthesis after the metric net weight;

c. The label shall state that the product must be stored under conditions to maintain the best quality during transport, storage and distribution (e.g. keep refrigerated/chilled/frozen).

d. The name and address of either of the following: manufacturer, packer, distributor, importer, exporter or vendor;

e. The lot identification code/number;

f. The words "Product of the Philippines" or the country of origin if imported;

g. The pictorial presentation (optional). Pictorial presentation of the product on the label should not mislead the consumer with respect to the product so illustrated:

h. The expiry date (DD/MM/YYYY) for chilled and frozen milkfish only: and

i. Other information that may be required by the importing country

9.3.2 Non-retail container

Information on the above provisions (Section 9.3.1) 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.

10 Methods of sampling, examination and analyses

10.1 Methods of sampling

Sampling of lots for examination of the final product shall be in accordance with the Codex General Guidelines on Sampling (CAC/GL 50-2004). A sample unit is the individually packed product or a 1 kg portion from bulk container.

10.2 Methods of analyses

10.2.1 Determination of Heavy Metals

According to the procedure published by AOAC, 2016, 20th edition or an equivalent analysis method.

10.2.2 Determination of Veterinary Drugs.

According to the procedure published by AOAC, 2016, 20th edition or an equivalent analysis method.

10.2.3 Determination of histamine

According to the AOAC 977.13 or an equivalent method of analysis.

10.2.4 Determination of microorganisms

According to the procedure described by FDA Bacteriological Analytical Manual (BAM), published by AOAC, 2016, 20th edition or an equivalent analysis method.

10.2.5 Determination of net weight

10.2.5.1 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.

10.2.5.2 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 tared pan.

10.2.6 Procedure for the detection of parasites

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.

11 Definition of defectives

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

11.1 Freezer burn

More than 10% of the declared weight of the frozen milkfish is affected by dehydration evident in more than 10% of the surface area.

11.2 Foreign matter

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

11.3 Off Odor and flavor

Presence of persistent and distinct objectionable odor and flavor.

11.4 Flesh abnormalities

Flesh exhibiting freezer burn (white chalky appearance) and pasty consistency upon thawing and characterized by loosening of scales, bruises of fish skin and extreme mutilation and presence of undesirable parts or incidence of viscera.

11.5 Parasites

Presence of visible parasites or parasitic infestation.

12 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 11 does not exceed the acceptance number (c) of the appropriate sampling plan (AQL-6.5);

ii) 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

iii) the essential composition and quality factors, food additives, contaminants, hygiene and handling, and labeling requirements of Sections 5, 6,7,8 and 9, respectively, are met.

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