

PHILIPPINE NATIONAL STANDARD

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Ethnic food products – Dried, salted fish – Specification



BUREAU OF PRODUCT STANDARDS

Foreword

The Bureau of Food and Drugs (BFAD), as mandated by RA 3720, to establish and formulate standards on food products, entered into Memorandum of Agreement with the Industrial Technology Development Institute (ITDI) in 1994 to develop selected ethnic food product standards.

Thus, the Food Standards Technical Committee (FSTC) was formed by ITDI to establish standards for selected ethnic food products that will assure food safety, harmonize with International Food Control laws, rules and regulations, and ensure better access to domestic and export market. FSTC is composed of representatives from the food industry particularly processors of the commodity under standardization, the academe, research and development institutes, concerned government agencies including BFAD and industry associations.

The BFAD Philippine National Standards (PNS) Committee was created under the Bureau Personnel Order (BPO) No. 9-D s. 2005 dated 13 January 2005 and as amended by BPO No. 63-A s. 2005 dated 09 May 2005, to fast track the finalization of Ethnic Food Product Standards and other priority food products standards endorsed to BFAD.

With the initiatives and efforts by the BFAD PNS Committee, Administrative Order (AO) No. 2005-0018 entitled "Philippine National Standard on Ethnic Food Products" was signed by Secretary Francisco Duque III on 30 June 2005. This AO covers the standards for (1) Dry Base Mixes for Soups and Sauces and (2) Sweet Preserves.

The standard on Dried, Salted Fish is also part of the ethnic food products, since this product requires more validations through national and regional public consultations. The standard developed aims to lead to consistencies in the fair and objective evaluation of the quality and safety of dried salted fish products. This will also contribute to industry market acceptance of the said product.

Ethnic food products – Dried, salted fish – Specification

1 Scope

This standard prescribes quality and safety requirements and specification for all commercial dried, salted fish in the country. It shall apply to those engaged in the manufacture, labeling, repacking, trade, exportation, importation and distribution of the above products.

2 Definition of terms

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

2.1**artificial drying**

the process of removing moisture from the fish in an enclosed chamber under controlled temperature, airflow and humidity

2.2**brine salting**

the process of soaking fish in salt solution of specific salt concentration for a particular period of time

2.3**container**

any form of packaging material, which completely or partially encloses the food (including wrappers). A container may enclose the food as a single item or several units or types of prepackaged food when such is presented for sale to the consumer

2.4**contaminants**

any biological or chemical agent, foreign matter, or other substances that are not intentionally added to food, which may compromise food safety or suitability

2.5**dry salting**

the process of mixing fish with salt and stacking the fish into layers one on top of the other

2.6**dried fish fillet**

dried fish made from fresh fish, cut parallel to the central bone wherein the fins, main bones and sometimes belly flaps are removed

2.7**food**

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

2.8

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 manufacturing, processing, preparation, treatment, packaging, transport or holding of such food results or maybe reasonably expected to result (directly or indirectly) in its or its by – product becoming a component of (or otherwise affecting the characteristic of) such food

2.9

food standard

a regulatory guideline that defines the identity of a given food product (i.e. its name and the ingredients used for its preparation) and specifies the minimum quality factors and, when necessary, the required fill of container. It may also include specific labeling requirements other than or in addition to the labeling requirements generally applicable to all prepackaged foods

2.10

good manufacturing practices (GMP)

a quality assurance system aimed at ensuring that products are consistently manufactured, packed, repacked or held to a quality appropriate for the intended use. It is thus concerned with both manufacturing and quality control procedures

2.11

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

2.12

label

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

2.13

labeling

any written, printed or graphic matter (1) upon any article or any of its container or wrappers or (2) accompanying the packaged food

2.14

lot

food produced during a period of time and under more or less the same manufacturing condition indicated by a specific code

2.15

packaging

the process of packing that is part of the production cycle applied to a bulk product to obtain the finished product. Any material, including painted material, employed in the packaging of a product including any outer packaging used for transportation of shipment. Packaging materials are referred to as primary or secondary according whether or not they are intended to be in direct contact with the product

2.16

processed food

refer to food that has been subjected to some degree of processing (e.g. milling, drying, concentration and canning, etc.), which partially or completely change the physico-chemical and/or sensory characteristics of the raw material

2.17

split dried fish

dried fish prepared by cutting the fish along the dorsal side from the base of the tail to the tip of the head with the internal organs and gills removed prior to salting and drying

2.18

sun or solar drying

the exposure of fish to open air under the heat of the sun

2.19

water activity (a_w)

the ratio of water vapor pressure of the substance to the vapor pressure of pure water at the same temperature

2.20

whole dried fish

fish dried in its original form, which has not been cut and may or may not have been eviscerated, and with scales intact

3 General guidelines

3.1 Technical specifications

3.1.1 Raw material

- a) The fish shall be fresh, and wholesome, fit for human consumption. The fish is obtained or prepared from any of the species listed but not limited to those in Annex A (*Species of Finfishes Utilized in the Production of Dried Whole Fish*) with salt added and dried in their original forms.
- b) Salt shall be of food grade quality and meets the purity requirements of standards for iodized salt as per R.A. No. 8172 "*An Act Promoting Salt Iodization Nationwide and for Related Purposes.*"

3.1.2 Manufacturing process

- a) GMP – The product shall be prepared in accordance with the Bureau of Food and Drug's AO 153 s. 2004, *Revised Guidelines on Current Good Manufacturing Practice in Manufacturing, Packing, Repacking or Holding Food and the Recommended Code of Practice for Dried Fish* (See Appendix 1).
- b) Food additives – Food additives, when used, shall be in accordance with the current regulations of the Bureau of Food and Drugs and may include the following: sorbic acid or its calcium, sodium or potassium salts maybe used as preservative at the

maximum level of 200 mg/kg of the final product, singly or in combination, expressed as sorbic acid.

- c) Packaging and labeling –
- ◇ Individual retail or bulk container shall contain only one species of fish, which are relatively uniform in size.
 - ◇ The average net weight of the sample unit may exceed the declared net weight; however, no individual container shall not be less than 95% of the declared net weight.
 - ◇ The product shall be packed in suitable hygienic containers that will maintain its quality during storage and transport.
- d. Labeling of retail packages/container – Each retail container shall be labeled and marked with the information in accordance with current BFAD Labeling Regulation.
- e. Labeling of Non-retail, Bulk Containers – The name of the product, lot identification code and the name and address of the manufacturer or packer shall appear in the container. However, the name and address of the manufacturer may be replaced by identification marks provided that such mark is clearly identified with accompanying documents.

3.1.3 Finished product

- a) Product Presentation – The products shall be presented as split/filletted dried fish, with or without backbone; or whole dried fish, in its original form, which has not been cut and may or may not have been eviscerated, and with scales intact with all parts intact.
- b) The final product shall conform to the current physico-chemical requirements in Annex B *Physico-chemical Requirements of Dried, Salted Fish*. These requirements may change subject to availability of new findings.
- c) The product shall be free from any objectionable odor, color, and flavor; and, any evidence of insect infestation and mold growth.
- d) The final product shall conform to the microbiological requirements in Annex C - *Microbiological Specifications for Dried, Salted Fish*. These requirements may change subject to availability of new findings.

3.1.4 Quality assurance/Control

- a) Sampling of lots for physico-chemical examination of the products shall be in accordance with sampling plans based on FAO/WHO Codex Alimentarius Commission Sampling Plans for Pre-packaged Foods (AQL=6.5). A sample lot (N) shall be the quantity of the product under similar conditions. A sample unit shall be the primary container where the product is in bulk; while the individual fish is the sample unit for retail packaged products. (see AnnexD - FAO/WHO *Alimentarius Sampling Plans for Prepackaged Foods (AQL = 6.5) CAC/RM 42-1969*).

- b) For microbiological analyses, the ICMSF (1978) suggested Case 2, 3- Class Sampling Plan is recommended.
- c) Defects – The product shall be considered defective when it exhibits any of the properties defined in Annex E - *Types of defects and Tolerances*.

4 Methods of analysis

4.1 Determination of moisture content – According to the method of AOAC (1995, 16th Edition) using the Oven Method.

4.2 Determination of water activity – According to the AOAC (1995, 16th Edition) Methods.

4.3 Determination of salt content – According to the modified Volhard Method based on AOAC (1995, 16th Edition) Method.

4.4 Determination of histamine content – According to the Fluorometric Method or ACOAC (1995, 16th Edition) method.

4.5 Determination of aerobic plate count, yeasts and molds – According to the USFDA Bacteriological Analytical Manual (1995, 8th Edition) using the Pour Plate Method.

4.6 Determination of coliform and *Escherichia coli* organisms – According to the procedure described by ICMSF, 1978.

4.7 Determination of *Staphylococcus aureus* – According to the procedure described by ICMSF, 1978.

4.8 Determination of net weight – According to the procedure described in Annex F – *Determination of Net Weight*.

Annex A

Species of finfishes utilized in the production of dried whole fish

Local name	Common name	Scientific name
A. Marine species		
1. <i>Alumahan</i>	Striped mackerel	<i>Rastrelliger chrysozonus</i>
2. <i>Balila/Espada</i>	Hairtail	<i>Trichiurus haumela</i>
3. <i>Banak</i>	Long-finned mullet	<i>Mugil vaigiensis</i>
4. <i>Bisugo</i>	Threadfin bream	<i>Nemipterus taeniopterus</i>
5. <i>Bonito/katchorita</i>	Eastern little tuna	<i>Euthunnus yaito</i>
6. <i>Dalagang bukid</i>	Golden caesio	<i>Caesio chrysozonus</i>
7. <i>Danggit/samaral</i>	Siganid	<i>Theuthis javus</i>
8. <i>Dilis</i>	Anchovies	<i>Stolephorus comersonii</i>
9. <i>Galunggong</i>	Round scad	<i>Decapterus macrosoma</i>
10. <i>Hasa-hasa</i>	Short-bodied mackerel	<i>Rastrelliger brachysomus</i>
11. <i>Kabasi</i>	Short finned gizzard	<i>Anodontostoma chacunda</i>
12. <i>Kalaso</i>	Lizard fish	<i>Saurida tumbil</i>
13. <i>Kanduli</i>	Manila sea catfish	<i>Arius manillensis</i>
14. <i>Kapak</i>	Black-finned mullet	<i>Mugil melinopterus</i>
15. <i>Lapad</i>	Deep-bodied sardines	<i>Sardinella brachysoma</i>
16. <i>Labahita</i>	Surgeon fish	<i>Acanthurus bleekeri</i>
17. <i>Lapu-lapu</i>	Spotted grouper	<i>Epinephelus corallicola</i>
18. <i>Mamaleng bato</i>	Small Mouthed threadfin	<i>Polynemus microstoma</i>
19. <i>Matang baka</i>	Big-eyed scad	<i>Caranx crumenophthalmus</i>
20. <i>Salay-salay</i>	Crevalle	<i>Caranx leptolepsis</i>
21. <i>Tamban</i>	Indian oil sardines	<i>Sardinella longiceps</i>
22. <i>Tangigue</i>	Spanish mackerel	<i>Caranx sexfasciatus</i>
23. <i>Torsillo</i>	Barracuda	<i>Sphyraena obtusata</i>
24. <i>Tunsoy</i>	Fimbriated sardines	<i>Sardinella fimbriata</i>
B. Fresh water species		
25. <i>Bangus</i>	Milkfish	<i>Chanos chanos</i>
26. <i>Dalag/Bulig</i>	Murrel/mud fish	<i>Opicephalus striatus</i>
26. <i>Gourami</i>	Gourami	<i>Osphronemus goramy</i>
27. <i>Hito</i>	Catfish	<i>Clarias batrachus</i>
28. <i>Tilapia</i>	Tilapia	<i>Tilapia mossambica</i>

Annex B

Physico-chemical requirements of dried, salted fish

Table 1 – Physico-chemical requirements of dried, salted fish

Characteristic	Requirement
Water activity (a_w), maximum (range), at 25°C	0.78
Salt content (percent Sodium chloride (NaCl), recommended level)	not less than 12.0 ^a
Histamine content (ppm edible portion, maximum)	200

^a Salt content may vary provided that the prescribed water activity is not exceeded

Annex C

Types of defect and tolerances

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

C.1 Foreign matters

The presence in the sample unit of any matter which: has not been derived from the species of fish in Annex A; does not pose a threat to human health and can be recognized either without magnification or is present at a level determined by any method including magnification that indicates non-compliance with good manufacturing and sanitation practices.

C.2 Appearance

C.2.1 Loose scales.

C.2.2 Presence of liver and blood stains, and traces of internal organs (for dried, salted, split/filleted fish).

C.2.3 Bursting of bellies (for dried, salted, whole fish).

C.2.4 Excessive cracks and crumbling texture.

C.2.5 Detaching of fish parts.

C.2.6 Excessive salt crystals appearing on more than 50% of the fish surface.

Annex D

Microbiological specifications for dried, salted fish

Table 2 – Microbiological specifications for dried, salted fish

Analyses	n	c	m	M
Aerobic plate count (cfu/g)	5	2	100,000	500,000
Yeasts and molds counts (cfu/g)	5	2	1,000	10,000
Total coliforms (MPN/g)	5	2	10	100
<i>Escherichia coli</i> (MPN/g)	5	2	--	11
<i>Staphylococcus aureus</i> (MPN/g)	5	2	--	1,000

where

n is the number of samples to be analyzed per volume product;
 c is the number of samples that may exceed m but not M;
 m is the maximum count achievable under GMP; and
 M is the maximum count beyond which product safety / quality may be affected.

Annex E

Determination of net content

E.1 Apparatus

Weighing balance (sensitivity: 0.10 gram)

E.2 Procedure

E.2.1 Weigh the sample unit on its original sample packed container. This is the gross weight.

E.2.2 Open and pour out the contents of each individual package. Wash the empty package and blot dry.

E.2.3 Weigh out the washed empty package. This is the weight of the packaging material.

E.2.4 Subtract the weight of the empty package from the gross weight. The resulting figure is the net weight of the individual package (net weight = gross weight – weight of packaging).

E.2.5 Average the results from all package of a sample representing a lot. Report result as the average net weight of the product.

Annex F

**FAO/WHO Alimentarius sampling plans for prepackaged foods (AQL = 6.5)
CAC/RM 42-1969**

**Sampling plan F.1
Normal operations
(Inspection level 1, AQL = 6.5)**

F.1.1 Net weight: is equal to or less than 1 kg (2.2 lb)

Lot size (N)	Sample size	Acceptance number (C)
4,800 or less	6	1
4,801 – 24,000	13	2
24,001 – 48,000	21	3
48,001 – 84,000	29	4
94,001 – 144,000	48	6
144,001 – 240,000	84	9
More than 240,000	126	13

F.1.2 Net weight: is grater than 1 kg (2.2. lb) but not greater than 4.5 kg (10 lb)

Lot size (N)	Sample size	Acceptance number (C)
2,400 or less	6	1
2,401 – 15,000	13	2
15,001 – 24,000	21	3
24,001 – 42,000	29	4
42,001 – 72,000	48	6
72,001 – 120,000	84	9
More than 120,000	126	12

F.1.3 Net weight is greater than 4.5 kg (10 lb)

Lot size (N)	Sample size	Acceptance number (C)
600 or less	1	1
601 – 2,000	13	2
2,001 – 7,200	21	3
7,201 – 15,000	29	4
15,001 – 24,000	48	6
24,001 – 42,000	84	9
More than 42,000	126	13

Sampling plan F.2
In case of disputes
(Inspection level 2, AQL = 6.5)

F.2.1 Net weight: is equal to or less than 1 kg (2.2 lb)

Lot size (N)	Sample size	Acceptance number (C)
4,800 or less	13	2
4,801 – 24,000	21	3
24,001 – 48,000	29	4
48,001 – 84,000	48	6
94,001 – 144,000	84	9
144,001 – 240,000	126	13
More than 240,000	200	19

F.2.2 Net weight is greater than 1 kg (2.2. lb) but not greater than 4.5 kg (10 lb)

Lot size (N)	Sample size	Acceptance number (C)
2,400 or less	13	2
2,401 – 15,000	21	3
15,001 – 24,000	29	4
24,001 – 42,000	48	6
42,001 – 72,000	84	9
72,001 – 120,000	126	13
More than 120,000	200	19

F.2.3 Net weight is greater than 4.5 kg (10 lb)

Lot size (N)	Sample size	Acceptance number (C)
600 or less	13	2
601 – 2,000	21	3
2,001 – 7,200	29	4
7,201 – 15,000	48	6
15,001 – 24,000	84	9
24,001 – 42,000	126	13
More than 42,000	200	19

Source : FAO/WHO Codex Alimentarius Commission Sampling Plans for Pre-Packaged Foods (AQL=6.5) (CAC/RM42 – 1969)

**Department of Health
Bureau of Food and Drugs**

Technical Committees on Philippine National Standards – Dried Salted Fish

Bureau of Food and Drugs – Philippine National Standard Committee for Food Products

- | | | |
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College of Home Economics
University of the Philippines

Prof. Teresita P. Acevedo

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