

PHILIPPINE NATIONAL STANDARD

Peanut Butter

Foreword

Led by the Industrial Technology Development Institute (ITDI), the Philippine National Standard for Peanut Butter—Specifications was crafted in view of the outdated regulation for peanut butter, i.e. Administrative Order No. 228 s. 1974. The new standard not only mentions the composition of peanut butter, but clearly specifies the percentage of raw peanuts in the finished product, and important safety and quality parameters.

The standard for peanut butter was set by conducting a market survey, and characterization of peanut butter brands and variants that are available in the Philippine market. Through ITDI Special Order No. 229 s. 2021 and its amendment, ITDI Special Order No. 217 s. 2022, a Technical Working Group (TWG) was created to review and revise the draft Philippine National Standard for Peanut Butter—Specifications. The TWG is composed of experts from the Agricultural Machinery Testing and Evaluation Center (AMTEC), Bureau of Philippine Standards (BPS), DOST-National Capital Region (DOST-NCR) Regional Office, Food Development Center (FDC), Food and Drug Administration (FDA), Food and Nutrition Research Institute (FNRI), National Association of Consumers, Inc. (NACI), Philippine Association of Food Technologists, Inc. (PAFT), Polytechnic University of the Philippines (PUP), and the University of the Philippines (UP). Several local peanut butter manufacturers were also part of the TWG and involved in the crafting of the standards. The establishment of the standard for peanut butter was made possible through a grants-in-aid project funded by the Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD).

1. Scope

This standard applies to all peanut butter brands intended for human consumption— as spread and as food ingredient, available for commercial retail and distribution in the Philippines.

2. Normative Reference

The following referenced documents are indispensable for the application of this document. The latest edition of the referenced document (including any amendments) applies.

Bureau of Agriculture and Fisheries Standards (BAFS). (2012) PNS/BAFS 107:2012 Philippine National Standards for Peanuts – Classification and Grading

Bureau of Agriculture and Fisheries Standards (BAFS). (2018) PNS/BAFS 82:2018 Philippine National Standard for White Sugar – Specification

Department of Health (DOH). (2004) Administrative Order No. 153 s. 2004 Revised Guidelines on Current Good Manufacturing Practice in Manufacturing, Packing, Repacking, or Holding Food

Department of Health (DOH). (2014) Administrative Order No. 2014-0030 Revised Rules and Regulations Governing the Labeling of Prepackaged Food Products Further Amending Certain Provisions of Administrative Order No. 88-B s. 1984 of the “Rules and Regulations Governing the Labeling of Pre-packaged Food Products Distributed in the Philippines”

Department of Health (DOH). (2006) Bureau Circular No. 2006-016 Updated List of Food Additives

Food and Agriculture Organizations of the United Nations/World Health Organization (FAO/WHO). (2004) CXG 50-2004 General Guidelines on Sampling

Food and Agriculture Organizations of the United Nations/World Health Organization (FAO/WHO). (2012) CXS 150-1985 Standard for Food Grade Salt

Food and Agriculture Organizations of the United Nations/World Health Organization (FAO/WHO). (2018) CXS 1-1985 Codex General Standard for the Labelling of Prepackaged Foods

Food and Agriculture Organizations of the United Nations/World Health Organization (FAO/WHO). (2019) CXS 212-1999 Standard for Sugars

Food and Agriculture Organizations of the United Nations/World Health Organization (FAO/WHO). (2020) CXC 1-1696 General Principles of Food Hygiene

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Food and Agriculture Organizations of the United Nations/World Health Organization (FAO/WHO). (2021) CXS 234-1999 Recommended Methods of Analysis and Sampling

Food and Agriculture Organizations of the United Nations/World Health Organization (FAO/WHO). (2021) CXS 192-1995 General Standard for Food Additives

Republic Act No. 8172 s. 1995 An Act for Salt Iodization Nationwide (ASIN), 10th Congress, First Regular Session. (1995) (enacted).

U.S. Food and Drug Administration Bacteriological Analytical Manual (BAM) Online. (2021) Chapter 3: Aerobic Plate Count.

U.S. Food and Drug Administration Bacteriological Analytical Manual (BAM) Online. (2020) Chapter 4: Enumeration of *Escherichia coli* and the Coliform Bacteria

U.S. Food and Drug Administration Bacteriological Analytical Manual (BAM) Online. (2022) Chapter 5: Salmonella

U.S. Food and Drug Administration Bacteriological Analytical Manual (BAM) Online. (2017) Chapter 18: Yeasts, Molds, and Mycotoxins

3. Definition of Terms

For the purpose of this document, the following terms and definitions apply.

3.1

Aflatoxin

a carcinogenic mycotoxin produced by some *Aspergillus* species (e.g. *A. flavus*, *A. parasiticus*, and *A. nomius*) in a wide range of agricultural commodities (PNS/BAFS 175:2015).

3.2

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 (FDA AO 2014-0030).

3.3

Defective

a unit of a product that contains one or more defects with respect to the quality characteristic(s) under consideration (Vasconcellos, 2005).

3.4

Food

any substance or product whether processed, partially processed or unprocessed that is intended for human consumption. It includes drinks, chewing gum, water and other

substances which are intentionally incorporated into the food during its manufacture, preparation and treatment (RA 10611).

3.5

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 ([Administrative Order 2014-0030](#)).

3.6

Free Fatty Acids (FFA)

amount of fatty acids, in the product, liberated from fats or oils through hydrolysis and used as a quality indicator of hydrolytic rancidity (PNS/BFAD 18:2008).

3.7

Ingredient

any substance including food additives, used as a component in the manufacture or preparation of a food and present in the final product in its original or modified form (FDA AO 153 s. 2004).

3.8

Label

a display of written, printed, or graphic matter upon the immediate container of any article and a requirement made by or under authority of existing law that any word statement or other information appearing on the label shall not be considered to be complied with unless such word, statement, or other information also appears on the outside container or wrapper of the retail package of such article or is easily legible to the outside container or wrapper (FDA AO 2014-0030).

3.9

Lot

food produced during a period of time and under more or less the same manufacturing conditions as indicated by a specific code (FDA AO 2014-0030).

3.10

Maximum use level

is the highest concentration of the additive determined to be functionally effective in a food or food category and agreed to be safe by the Codex Alimentarius Commission. It is generally expressed as mg additive/kg of food (CXS 192-1995).

3.11

Net weight

declared on a label indicates that the package contains a specific amount of commodity exclusive of wrapping materials (NIST Handbook 133, 2019).

3.12

Peanut heart

the embryo or germ of the mature peanut seed which consists of a small radicle and a plumule. The radicle and plumule contain bitter saponin compounds, which are often removed in commercial blanching (Young and Schadel, 1990).

3.13

Peroxide value

a measure of the amount of oxygen chemically bound to an oil or fat as peroxides, particularly hydroperoxides (ISO 3960:2017).

3.14

Prepackaged

means packaged or made up in advance in a container, ready for sale to the consumer, or for catering purposes (FDA AO 2014-0030).

3.15

Skin

commonly used term to refer to the seedcoat or testa, which is the light brown to brownish papery covering of a kernel (PNS/FDA 28:2010).

4. Description

4.1. Product Description

Peanut Butter is a light to medium brown colored food product with a uniformly smooth or crunchy texture and a nutty-characteristic flavor. It is spreadable, and may or may not have noticeable oil separation. It shall have a minimum peanut content of at least 75% of the weight of the finished product.

4.2. Process Description

Peanut Butter is prepared from good quality deshelled peanuts, which may or may not have peanut heart and seedcoat, that is

- 4.2.1 Dry roasted or oil fried
- 4.2.2 Mixed and ground with sugar and salt, with or without added ingredients and food additives, and
- 4.2.3 Packed into appropriate containers.

5. Essential Composition and Quality Factors

5.1 Ingredients

5.1.1 Basic Ingredients

5.1.1.1 Peanut - shall be any acceptable peanut variety (*Arachis hypogaea* L.), presented as kernels that are sound, wholesome, mature, and fit for human consumption. The peanut used shall meet the minimum requirements stated in PNS/BAFS 107:2012 Philippine National Standard for Peanuts— Classification and Grading, and/or other applicable standards. Varieties of peanuts that can be used are listed, but not limited, in Annex A of PNS/BAFS 107:2012.

5.1.1.2 Sugar - shall be food grade sugar that conforms to CXS 212-1999 Standard for Sugar, PNS/BAFS 82:2018 Philippine National Standard for Sugar – Specification, [Republic Act No. 8976 if refined sugar](#), and/or other applicable standards.

5.1.1.3 Iodized salt - shall be food grade salt that conforms to CXS 150-1985 Standard for Food Grade Salt, R.A. No. 8172 s. 1995 An Act Promoting Salt Iodization Nationwide (ASIN), and/or other applicable standards.

5.1.2 Optional Ingredients

These ingredients shall be of food grade quality and conform to all applicable standards, which may include oils, sweetening agents, and food additives. Food additives when used shall be in accordance with the regulations prescribed in the FDA Bureau Circular No. 016, s. 2006 Updated List of Food Additives, and CXS 192-1995 General Standard for Food Additives, and/or their future amendments. Oils, sweetening agents, and food additives, listed but not limited to those in Table 1, may be used for the manufacture of peanut butter.

Table 1. Food additives for peanut butter in accordance with the regulations of the FDA Philippines and the CODEX General Standard for Food Additives.

FUNCTIONAL CLASS	FOOD ADDITIVE	MAXIMUM USE LEVEL
Artificial sweetener	Acesulfame potassium*	1000 mg/kg
	Aspartame*	1000 mg/kg
	Neotame*	33 mg/kg
	Steviol glycosides*	330 mg/kg
	Sucralose*	400 mg/kg
	Saccharins*	160 mg/kg
Emulsifiers and stabilizers	Polydimethylsiloxane*	10 mg/kg
	Phosphates*	2200 mg/kg
Antioxidants	Butylated Hydroxyanisole**	200 mg/kg
	Butylated Hydroxytoluene**	200 mg/kg
	Tocopherols*	300 mg/kg

	Ethylene Diamine Tetra Acetates*	250 mg/kg
Preservatives	Benzoates*	1000 mg/kg
	Hydroxybenzoates, para-*	1000 mg/kg
	Sorbates*	1000 mg/kg
	Sulfites*	500 mg/kg

*Based on the Food Category System No. 04.2.2.5. Vegetable (including mushrooms and fungi, roots and tubers, pulses and legumes, and aloe vera), seaweed, and nut and seed purees and spreads (e.g., peanut butter) (CXS 192-1995)

**Based on the Food Category System No. 04.2.2.5. Vegetable, and nut and seed purees and spreads (e.g. peanut butter) (DOH-FDA Circular No. 2006-016)

5.2 Quality and Safety Criteria

Peanut butter shall conform to the following chemical and microbiological properties.

5.2.1 Chemical Properties. The products shall conform to the chemical requirements specified in Table 2.

Table 2. Chemical requirements for peanut butter.

PARAMETER	MAXIMUM LEVEL
Aflatoxin (ppb)	<15*
Peroxide Value (meq/Kg)	5**
Free Fatty Acid (% Oleic acid)	1**
Total Fat	<55%***

*Based on Maximum and Guideline Levels for Contaminants and Toxins in Foods for Peanut (CXS 193-1995), and USDA Commodity Requirements PP12 Peanut Products for Use in Domestic Programs Section 1.1 B Quality of Peanut Butter

**Based on 4.3. Chemical requirements for peanut butter by Zambia Bureau of Standards

***Based on DOH AO No. 228 s. 1974

5.2.2 Microbiological Properties. The product shall conform to the following microbiological requirements specified in Table 3.

Table 3. Microbiological limits for peanut butter.

TEST/MICROORGANISM	ACCEPTABLE LEVEL
Coliforms, MPN/g	<10*
Aerobic Plate Count, CFU/g	<10,000*
<i>Salmonella</i> /25g	absent
Yeasts and Molds, CFU/g	<100*

*Based on USDA Commodity Requirements PP12 Peanut Products for Use in Domestic Programs Section 1.1 B Quality of Peanut Butter

5.3 Sensory Properties

The product should have a light to medium brown color, and have a nutty characteristic flavor. It should also be spreadable.

6. WEIGHTS AND MEASURES

6.1 Fill of Containers

6.1.1 Minimum Fill

6.1.1.1 Rigid container shall be well filled with the product, which shall occupy not less than 90% (minus any necessary headspace according to good manufacturing practices) of the water capacity of the container. The water capacity of the container is the maximum volume of distilled water at 20°C that the sealed container can hold when completely filled.

6.1.1.2 Flexible containers shall be filled as full as commercially practicable.

7. DEFECTS

A sample unit should be considered defective when it exhibits any of the defects as defined and described in the following subsections.

7.1 Types of Defects

7.1.1 Foreign matter

The presence in the sample unit of any matter which has not been derived from the components or constituents of ingredients used in the product; does not pose threat to human health; and can be 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.

7.1.2 Appearance

The product is considered defective when there is apparent discoloration or darkening of the characteristic color of the product. The presence of visible mold growth is also indicative of product deterioration.

7.1.3 Odor and Flavor

The presence of objectionable odors and/or flavors are considered as indicators of product decomposition or deterioration.

7.1.4 Net Weight

Product content that is more than (overfill) or less than (underfill) the declared net weight of the product on its label is considered as defective.

7.2 Classification as Defectives

A container whose contents exhibit any of the defects described in Section 7.1, and in which the number of defects observed per unit lot exceeds the acceptance

number prescribed in the appropriate sampling plan shall be considered as “defective”.

8. LOT ACCEPTANCE

A lot shall be considered acceptable when it complies with the applicable quality and safety criteria as prescribed in Section 5.2, and the number of “defectives”, as defined in Section 7.2, does not exceed the acceptance number prescribed in the appropriate sampling plan (Annex B).

9. HYGIENE

The products covered by the provisions of this standard shall be prepared and handled in accordance with the appropriate sections of the CXC 1-1696 General Principles of Food Hygiene, and/or the FDA A.O. No. 153 s. 2004 Revised Guidelines, Current Good Manufacturing Practices in Manufacturing, Packing, Repacking or Holding Food, and their future amendments, and processed according to PNS/FDA xxx:XXXX Recommended Code of Practice for the Processing of Peanut Butter.

10. LABELING

The product label shall include the minimum mandatory information as indicated in the provisions of the CXS 1-1985 General Standard for the Labeling of Prepackaged Foods, and the FDA A.O. No. 2014-0030 Revised Rules and Regulations Governing the Labeling of Prepackaged Food Products Further Amending Certain Provisions of Administrative Order No. 88-B s. 1984 of the “Rules and Regulations Governing the Labeling of Pre-packaged Food Products Distributed in the Philippines,” and for Other Purposes, and their future amendments. The label shall contain the following information:

10.1 Product Name/ Name of the Food

10.2 Use of Brand Name and/or Trademark

10.3 Complete List of Ingredients

10.4 Net contents

10.5 Name and address of the manufacturer, re-packer, packer, importer, trader, distributor

10.6 Lot identification

10.7 Storage condition

10.8 Expiry or Expiration date/ Use-by-date/ Consume Before Date (Recommended last consumption date)

10.9 Food Allergen Information

10.10 Direction/Instruction(s) for Use

10.11 Nutrition facts/ Nutrition Information/ Nutritive Value

11. METHOD OF SAMPLING AND ANALYSIS

11.1 Method of Sampling

Sampling should be done in accordance with CXG 50-2004 General Guidelines on Sampling and CXS 234-1999 Recommended Methods of Analysis and Sampling (Annex B) and their series of subsequent amendments, or any applicable prescribed methods of sampling.

11.2 Methods of Analyses

11.2.1 Detection and Quantification of Total Aflatoxin Content

The method of detection and quantification of the total aflatoxin content shall be done in accordance with a standard or validated method of analysis.

11.2.2 Determination of Free Fatty Acid

The method of determination of free fatty acid (as oleic acid) shall be done in accordance with a standard or validated method of analysis.

11.2.3 Determination of Peroxide Value

The method of determination of peroxide value on fat basis shall be done in accordance with a standard or validated method of analysis.

11.2.4 Determination of Total Fat

The method of determination of total fat shall be done in accordance with a standard or validated method of analysis.

11.2.5 Enumeration of Coliform Count

The method of enumeration of coliform count should be done in accordance with USFDA Bacteriological Analytical Method (BAM) - Chapter 4 Enumeration of *Escherichia coli* and the Coliform Bacteria (2002).

Testing methods from International Organization for Standardization (ISO), Association of Official Analytical Chemists (AOAC) Official Methods of Analysis (OMA), and Performance Tested Methods (PTM) and other recognized reference methods for microbiological testing can also be used.

11.2.6 Enumeration of Standard Plate Count (SPC)/Aerobic Plate Count (APC)

The method of enumeration of Standard Plate Count (SPC)/Aerobic Plate Count (APC) shall be done in accordance with USFDA Bacteriological Analytical Method (BAM) - Chapter 3 Pour Plate Method (2001).

Testing methods from International Organization for Standardization (ISO), Association of Official Analytical Chemists (AOAC) Official Methods of Analysis (OMA), and Performance Tested Methods (PTM) and other recognized reference methods for microbiological testing can also be used.

11.2.7 Detection of *Salmonella*

The method of detection and enumeration of *Salmonella* shall be done in accordance with USFDA Bacteriological Analytical Method (BAM) Chapter 5 Conventional Method (2018).

11.2.8 Enumeration of Yeasts and Molds Count

The enumeration of yeasts and molds count shall be done in accordance with USFDA Bacteriological Analytical Method (BAM) Chapter 18 Pour Plate Method (2001).

Testing methods from International Organization for Standardization (ISO), Association of Official Analytical Chemists (AOAC) Official Methods of Analysis (OMA), and Performance Tested Methods (PTM) and other recognized reference methods for microbiological testing can also be used.

11.2.9 Determination of % Fill of Container

The determination of % fill of container shall be done in accordance to the Food and Agriculture Organization of the United Nations Manuals of Food Quality Control (1986) as described in Annex A.

ANNEX A

Determination of % Fill of Container

1. Apparatus and utensils:

Weighing scale - digital, 500 g capacity; 0.1 g sensitivity
Headspace gauge

2. Procedure:

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

b. Pour out the food into another container. Wash, dry and weigh the original container

c. Fill the container with water to within 5 mm of the top. Weigh the container and water.

d. Draw off water from the container until the water is at the same level as measured for the food. Again, weigh the container and water. (Note that the water temperature should be the same during both weighing)

3. Calculate the % Fill of the Container

$$\% \text{ Fill of the container} = \frac{W_2 - T}{W_1 - T} \times 100\%$$

where:

T = tare weight of the container

W₁ = Container plus water, first weight

W₂ = Container plus water, second weight

Reference:

Food and Agriculture Organization of the United Nations. (1986). Manuals of Food Quality Control 14/8. P. 184.

ANNEX B

Sampling Plan

**SAMPLING PLAN 1
(Inspection Level I, AQL = 6.5)**

NET WEIGHT IS EQUAL TO OR LESS THAN 1 KG (2.2LB)

Lot Size (N)	Sample Size (n)	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
84,001 - 144,000	38	5
144,001 - 240,000	48	6
more than 240,000	60	7

NET WEIGHT IS GREATER THAN 1 KG (2.2LB) BUT NOT MORE THAN 4.5 KG (10LB)

Lot Size (N)	Sample Size (n)	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	38	5
72,001 - 120,000	48	6
more than 120,000	60	7

NET WEIGHT GREATER THAN 4.5 KG (10 LB)

Lot Size (N)	Sample Size (n)	Acceptance Number (c)
600 or less	6	1
601 - 2,000	13	2
2,001 - 7,200	21	3
7,201 - 15,000	29	4
15,001 - 24,000	38	5
24,001 - 42,000	48	6
more than 42,000	60	7

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SAMPLING PLAN 2
(Inspection Level II, AQL = 6.5)

NET WEIGHT IS EQUAL TO OR LESS THAN 1 KG (2.2 LB)

Lot Size (N)	Sample Size (n)	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	38	5
84,001 - 144,000	48	6
144,001 - 240,000	60	7
more than 240,000	72	8

NET WEGHT IS GREATER THAN 1 KG (2.2 LB) BUT NOT MORE THAN 4.5 KG (10 LB)

Lot Size (N)	Sample Size (n)	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	38	5
42,001 - 72,000	48	6
72,001 - 120,000	60	7
more than 120,000	72	8

NET WEIGHT GREATER THAN 4.5 KG (10 LB)

Lot Size (N)	Sample Size (n)	Acceptance Number (c)
600 or less	13	2
601 - 2,000	21	3
2,001 - 7,200	29	4
7,201 - 15,000	38	5
15,001 - 24,000	48	6
24,001 - 42,000	60	7
more than 42,000	72	8

Reference:

Food and Agriculture Organizations of the United Nations/World Health Organization (FAO/WHO). (2021) CXS 234-1999 Recommended Methods of Analysis and Sampling

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