

FINAL DRAFT STANDARDS FOR PROCESSED PILI NUT PRODUCTS

1. SCOPE

This standard shall apply to fully ripened pili nut of cultivars grown from *Canarium ovatum* Engl. which is processed by roasting, glazing, salting and/or sugar-coating, and packed in suitable containers.

2. DEFINITION OF TERMS

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

Aflatoxins – secondary metabolites known to be toxic to humans and are produced by fungi belonging to the genus *Aspergillus* including *A. flavus*, *A. parasiticus*, *A. vesicolor* and *A. indulans* on suitable hosts/substrates such as peanut, corn, copra, cassava and other oilseeds.

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.

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

Food – any substance, whether processed, semi-processed or raw, which is intended for human consumption, and includes drink, chewing gum and any substance which has been used in the manufacture, preparation or treatment of

“food” but does not include cosmetics or tobacco or substances used only as drugs.

Food Additives – any substance the intended use of which results or may reasonably be expected to result, directly or indirectly, in its becoming a component or otherwise affecting the characteristics of any food (including any substance intended for use in producing, manufacturing, packing, processing, preparing, treating, packaging, transporting, or holding food; and including any source of radiation intended for any such use), if such substance is not generally recognized, among experts qualified by scientific training and experience to evaluate its safety, as having been adequately shown through scientific procedures to be safe under the conditions of the intended use (R.A. 3720.Food, Drugs and Cosmetic Act).

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 the container. It may also include specific labeling requirements other than or in addition to the labeling requirements generally applicable to all prepackaged foods.

Glazing – coating of food with substances such as syrups and glazing agents (food additives), giving the food a glossy appearance or protective outer layer.

Free Fatty Acid – amount of fatty acids in the product, liberated from fats and oils through hydrolysis and used as a quality indicator of hydrolytic rancidity.

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.

Kernel – the inner portion of the seed with the seed coat intact.

Label – includes any tag, brand, mark, pictorial, or other descriptive script, written, printed, marked, embossed or impressed on, or attached to the container.

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

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

Moisture content - the percentage weight of water in relation to the dry weight of the product.

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 to whether or not they are intended to be in direct contact with the product.

Peroxide Value – is a measure of the primary oxidation products such as peroxides and hydroperoxides that develops in oils or fats and used as an indicator of oxidative rancidity.

Pili nut – the kernel of an indigenous crop pili nut tree, *Canarium ovatum* Engl-, which is native to the Philippines belonging to the family Burseraceae

Rancidity – formation of off-flavors in food due to lipid oxidation (oxidative rancidity) and/or release of free fatty acids by lipolysis (hydrolytic rancidity).

Roasting – a cooking method which subjects the food to dry heat, whether from an open flame, oven, or other heat source; causing physico-chemical changes such as browning, caramelization, flavor development, and moisture reduction.

Seedcoat or testa – light brown to brownish papery covering of a kernel.

Shell – the endocarp of hard stony covering of a kernel after removing the violet to black pulp (exocarp) and the fibrous flesh (mesocarp)

Sweetening Agent – includes one or more of the sugars, honey, high intensity sweeteners and artificial sweeteners.

Water Activity – the ratio of vapor pressure of water in the product to the water vapor pressure of pure water at the same temperature. It is also a measure of water available for the growth of microorganisms.

3. DESCRIPTION OF PRODUCTS

3.1 Product Definition

Processed pili nut products are those prepared primarily from the kernels of pili (*Canarium ovatum* Engl.). The product may include various ingredients and may have undergone roasting, salting, glazing, sweetening, and/or other preparation methods.

Processed pili nut products may be classified as follows:

Whole pili nut products – made from whole pili nuts with or without intact seedcoat or testa.

Split pili nut products – made from pili nuts which are removed of their seedcoat or testa and cut lengthwise.

Ground pili nut products – made from broken or small pili nut pieces.

3.2 Process Description

The product shall have undergone a process sufficient to ensure quality and shelf life stability at ambient conditions and shall be packed in any suitable container.

4. ESSENTIAL COMPOSITION AND QUALITY FACTORS

4.1 Raw Materials

Basic Ingredient

Pili nut – Kernels to be used shall be fresh, sound, clean and fully ripened. It must conform to the requirements prescribed by PNS/BAFPS 34: 2005 (Philippine National Standards for *Pili* Nuts).

Optional Ingredients

- (a) **Salt** - coarse or fine sodium chloride of food grade quality and meets the purity requirements as specified in Section 4.1 of the Implementing Rules and Regulations of the ASIN Law, Republic Act (RA) 8172, An Act Promoting Salt Iodization Nationwide.
- (b) **Sweetening agent** - one or more of the sugars, honey, high intensity sweeteners or artificial sweeteners.
- (c) **Other ingredients** - all other ingredients to be used shall be of food grade quality and conform to all applicable food standards (e.g. chocolate, cinnamon, sesame seeds, garlic, and spices).

4.2 Quality Criteria

4.2.1 General Requirements

(a) Aflatoxin

The level of aflatoxin should not be greater than 10 ppb.

(b) Moisture Content

The moisture content should not be greater than 4%

(c) Water activity

The Water activity (a_w) should not be greater than 0.70 at 25°C

(d) Fat Content

The fat content should not be greater than 70%

(e) Free Fatty Acid

The product shall have a free fatty acid content of not greater than 1.0 % as oleic acid.

(f) Peroxide Value

The product shall have a peroxide value of not greater than 10 meq/kg.

4.2.2 Types of Defects

(a) Odor/flavor/color

A sample unit affected by objectionable odors, flavors and colors which are indicative of rancidity and mold growth.

(b) Foreign matter

The presence in the sample unit of any matter, which has not been derived from pili nut, does not pose a threat to human health and is readily recognized without magnification or is present at a level determined by magnification method or any equivalent methods that indicates non-compliance with good manufacturing practices and sanitation practices.

4.2.3 Classification of “Defectives”

A container that has any of the type of defects set in 4.2.2 shall be considered as “defective”.

4.2.4 Lot Acceptance

A lot shall be considered as meeting the applicable quality requirements when the number of “defectives”, as defined in sub-section 4.2.3, does not exceed the acceptance number of the appropriate sampling plan.

5. FOOD ADDITIVES

Food additives when used shall be in accordance with the regulations established by the Bureau of Food and Drugs (BFAD) (Bureau Circular No. 016 s.2006. Updated List of Food Additives) and/or the Codex Alimentarius Commission.

The following food additives listed in, but not limited to, Table 1, may be used for the manufacture of processed pili nut products.

Table 1. **Food Additives for Processed Pili Nut Products.*** (BFAD B.C. No.016 s. 2006. Updated List of Food Additives)

Function	Additive	Maximum Level
A. Antioxidant	Ascorbyl Esters	200 mg/kg (as ascorbyl stearate)
	BHA	200 mg/kg (fat or oil basis)
	EDTA	200 mg/kg (as anhydrous calcium disodium EDTA)
	Mineral Oil	200 mg/kg
	Gallate, Propyl	200 mg/kg (fat or oil basis)
	Sorbates	1000 mg/kg (as sorbic acid)
	Tocopherols	1500 mg/kg
B. Color	Allura Red AC	100 mg/kg
	Azorubine	100 mg/kg
	Brilliant Black PN	100 mg/kg
	Brilliant Blue FCF	100 mg/kg
	Brown HT	100 mg/kg
	Canthaxanthin	8.2 mg/kg
	Caramel Color Class III	GMP
	Caramel Color Class IV	GMP
	Carmines	100 mg/kg

	Carotenes, Vegetable	GMP
	Carotenoids	GMP
	Chlorophylls, Copper Complexes	GMP
	Curcumin	100 mg/kg
	Grape Skin Extract	GMP
	Indigotine	100 mg/kg
	Iron Oxides	GMP
	Ponceau 4R	100 mg/kg
	Quinoline Yellow	100 mg/kg
	Riboflavines	GMP
	Sunset Yellow FCF	100 mg/kg
	Tartrazine	100 mg/kg
C. Sweetener	Acesulfame Potassium	1000 mg/kg
	Aspartame	1000 mg/kg
	Saccharin	500 mg/kg
	Sucralose	150 mg/kg
D. Preservative	Hydroxybenzoates, P-	300 mg/kg (as p-hydroxybenzoic acid)
	Phosphates	1100 mg/kg (as phosphorus)
	Sulphites	500 mg/kg (as residual SO ₂)
E. Emulsifier/Stabilizer	Sorbitan Esters of Fatty Acid	5000 mg/kg
	Diacetyltartaric and Fatty Acid Esters of Glycerol	GMP
F. Humectant	Propylene Glycol	50000 mg/kg
	Tartrates	1300 mg/kg (as tartaric acid)

*Based on the Food Category System: 04.2.2.2 Dried Vegetables, Seaweeds, Nuts and Seeds; 15.2 Processed nuts, including coated nuts and nut mixtures (with e.g. dried fruit)

6. HYGIENE

6.1 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/or the BFAD A.O. No. 153 s. 2004 - Guidelines, Current Good Manufacturing Practices in Manufacturing, Packing, Repacking or Holding Food and processed according to the Recommended Code of Practice for the Processing and Handling of Processed Pili Nut Products (PNS/BFAD No. ____).

6.2 When tested by appropriate methods of sampling and examination, the product:

- shall be free from filth that may pose a hazard to health;
- shall be free from parasites which may represent a hazard to health;
- shall not contain any substance originating from microorganisms in amounts which may represent a hazard to health;
- shall be free from microorganisms capable of development under normal conditions of storage; and
- shall be free from container integrity defects which may compromise the hermetic seal.

7. LABELING

7.1 Each container shall be labeled and marked with the following information in accordance with BFAD's Labeling Regulation:

- (a) The name of the product shall be "Pili Nuts", It shall be preceded by additional descriptors as to forms and styles (e.g. "Roasted Pili Nuts", "Sugar-coated Pili Nuts", "Honey-glazed Pili Nuts").
- (b) The complete list of ingredients and food additives used in the preparation of the product in descending order of proportion.
- (c) The net quantity of content by weight in the metric system. Other systems of measurement required by importing countries shall appear in parenthesis after the metric system unit.
- (d) The name and address of the manufacturer, packer and/or distributor of the food.
- (e) Open date marking
The words "Best/Consume Before" indicating end of period at which the product shall retain its optimum quality attributes at defined storage conditions.
- (f) Lot or code number identifying product lot.

- (g) The words “Product of the Philippines”, or the country of origin if imported.
- (h) Additional requirements
A pictorial representation of raw material on the label should not mislead the consumer with respect to the raw material so illustrated.

7.2 Nutrition Labeling

Nutrition labeling shall conform to the established regulations of BFAD and/or authority.

8. METHODS OF ANALYSIS AND SAMPLING

8.1 Determination of Water Activity

According to the AOAC Official Methods of Analysis, 18th ed., 2005. Method No. 978.18.

8.2 Determination of Moisture Content (Vacuum Oven Method)

According to the AOAC Official Methods of Analysis, 18th ed., 2005. Method No. 934.06.

8.3 Determination of Fat Content

According to the AOAC Official Methods of Analysis, 16th ed., 1995. Method No. 948.22.

8.5 Determination of Free Fatty Acid

According to the AOAC Official Methods of Analysis, 18th ed., 2005. Method No. 940.28.

8.6 Determination of Peroxide Value

According to the AOAC Official Methods of Analysis, 18th ed., 2005. Method No. 965.33.

8.7 Determination of Aflatoxin

According to the AOAC Official Methods of Analysis, 18th ed., 1995. Method No. 975.36 or other official method of scientifically validated method.

8.7 Method of Sampling

Sampling shall be in accordance with the FAO/WHO Codex Alimentarius Sampling Plans for Prepackaged Foods - CAC/RM 42-1969, Codex Alimentarius Volume 13, 1994.

9. REFERENCES

A.O. No. 153 s. 2004. **Guidelines, Current Good Manufacturing Practice in Manufacturing, Packing, Repacking or Holding Food.** Bureau of Food and Drugs, Department of Health. Alabang, Muntinlupa City, Philippines.

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B.C. No.016 s. 2006. **Updated List of Food Additives.** Bureau of Food and Drugs, Department of Health. Alabang, Muntinlupa City, Philippines.

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De Leon, S. Y. *et al.* 1999. **Basic Foods for Filipinos.** 3rd Edition. Merriam and Webster Bookstore, Inc., Manila, Philippines.

Fennema, O. 1996. **Food Chemistry.** Marcel Dekker, Inc. New York, New York.

Food, definition. ALINORM 04/27/41, para. 88 and Appendix VI. 2005. Codex Alimentarius Commission. Food and Agriculture Organization. Viale delle Terme di Caracalla, 00100 Rome, Italy.

Philippine Council for Agriculture, Forestry and Natural Resources Research and Development. 1997. **The Philippines Recommends for *Pili***. Department of Science and Technology, Los Banos, Laguna, Philippines.

PNS/BAFPS 34:2005. **Philippine National Standard: Pili Nuts**. Bureau of Product Standards, Department of Trade and Industry, Makati City, Philippines.

R.A. 3720. **Food, Drugs and Cosmetic Act**. Bureau of Food and Drugs. Department of Health. Alabang, Muntinlupa City, Philippines.

ANNEX 1

Pili Nuts

Philippine National Standard (PNS/BAFPS 34:2005)