PHILIPPINE NATIONAL STANDARD

PNS/BFAD 23:2010
ICS 67.060

Recommended code of practice for the processing and handling of fried corn snacks (Chichacorn)

BUREAU OF PRODUCT STANDARDS

Member to the International Organization for Standardization (ISO)
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Foreword

The Philippine National Standards for Fried Corn Snacks (Chichacorn) and Recommended Code of Practice for the Processing and Handling of Fried Corn Snacks (Chichacorn) are product standards developed under the Project "Development of Standards for Selected Ethnic Food Products - Phase I" by the Technical Working Group (TWG) The TWG is composed of representatives from College of Home Economics – UP Diliman, Philippine Chamber of Food Manufacturers Inc. (PCFMI), Philippine Association of Food Technologists Inc. (PAFTI), Integrated Food Manufacturers Association of the Philippines (INFOMAPP), Bureau of Agriculture and Fisheries Product Standards, Department of Agriculture (BAFPS-DA), Food Products Division – Department of Trade and Industry (FPD-DTI), Industrial Technology Development Institute - Department of Science and Technology (ITDI-DOST), Bureau of Product Standards - Department of Trade and Industry (BPS-DTI), Philippine Council for Industry and Energy Research and Development – Department of Science and Technology (PCIERD – DOST) and Department of Health-Food and Drug Administration (DOH-FDA).

The Standard and RCP were developed to ensure the safety and quality of the fried corn snacks and to make if acceptable and globally competitive in the world market.

The TWG tested and analyzed different samples of the product. They reviewed the draft Standard and Recommended Code of Practice before submitted to the FDA for public consultation.

The draft was posted at the BFAD website to solicit comments from different stakeholders before the public consultations were conducted. The public consultation workshops were done on two occasions – first, in Batac, Ilocos Norte (Region I) on 17 August 2007 and second in Quezon City (National Capital Region) on 07 September 2007.

The final drafts were forwarded to the BAFPS-DA for Sanitary and Phytosanitary (SPS) notifications by the World Trade Organization Secretariat for comments by other countries.

The final copy was submitted to the BPS-DTI ready for adoption.

Recommended code of practice for the processing and handling of fried corn snacks (Chichacorn

1 Scope

This Code of Practice is concerned with the receipt of raw materials and ingredients, preparation and processing of fried corn snacks products as defined in this Code, in order to conform with the required standards stated in PNS/BFAD No. 22:2009 Standards for Fried Corn Snacks. The product shall be prepared from whole kernel of corn of *Zea maize* spp. used for fried corn snacks processing.

This Code is intended to provide guidelines to achieve compliance with the standards for fried corn snacks packed in any suitable container.

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 Code, the following definitions apply:

3.1
aflatoxins
these are 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

3.2
container
it is 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

3.3
current good manufacturing practices (cGMP)
it is 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

3.4
food
it is 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.

3.5
food additive
it is 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

3.6
food standard
it is 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

3.7
free fatty acid
it is the amount of fatty acids in the product, liberated from fats and oils through hydrolysis and used as a quality indicator of hydrolytic rancidity

3.8
frying
it is cooking in hot fat or oil deep enough to immerse the food entirely

3.9
ingredient
it is 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

3.10
label
it includes any tag, brand, mark, pictorial, or other descriptive script, written, printed, marked, embossed or impressed on, or attached to the container

3.11
labeing
it is any written, printed or graphic matter (1) upon any article or any of its container or wrappers and/or (2) accompanying the packaged food

3.12
lot
it is food produced during a period of time and under more or less the same manufacturing condition indicated by a specific code

3.13
moisture content
it is the percentage of water in the product obtained using the vacuum oven method

3.14
packaging
it is 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

3.15
peroxide value
it 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

3.16
sweetening agent
it is one or more of the sugars, honey, high intensity sweeteners and artificial sweeteners

3.17
water activity
it is 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

4 Raw materials, ingredients, and packaging material requirements

4.1 Raw materials and ingredients.

Raw materials for processing shall not contain parasites, microorganisms, toxins, and decomposed or extraneous substances.

4.1.1 Corn – Corn kernels to be used for processing shall be sound, clean, mature and is of a quality fit to be sold fresh for human consumption.

4.1.2 Oil – Oil to be used shall be clear, refined, deodorized and edible in conformity with all applicable food standards. It may be of vegetable source/origin or their combination thereof. It must conform to RA 8976 of the Food Fortification Law.

4.1.3 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.

4.1.4 Flavoring agent/s – All flavoring agents must conform to the regulations of BFAD as defined in Bureau Circular 16:2006.and/or authority.

4.1.5 Sweetening agent – Sweetening agent or agents to be used shall conform to food standards required by the Bureau of Food and Drugs (BFAD), the Codex Alimentarius Commission and/or authority for these products.

4.1.6 Food additives – All additives shall conform to the food standards required by the BFAD and/or authority.

4.1.7 Water – Only clean, potable water (Annex A) shall be used for the preparation and for all the pretreatment and processing steps of snacks production.

Non-potable water may be used only for operations not in direct contact with the food materials provided that this does not pose a hazard to health as determined and approved by the official agency having the jurisdiction over it.

4.2 Packaging materials.

The packaging materials should be appropriate for the product to be packed and for the expected conditions of handling during distribution and storage. These should provide the products adequate protection from contamination and should be sufficiently durable to withstand mechanical, chemical and thermal stresses encountered during processing and normal distribution. All packaging materials must be clean and free from defects that may affect the product or package integrity. These shall be stored in a clean and sanitary manner.

5 Hygiene

It is recommended that the product covered by the provisions of this code of practice 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, covering the plant facilities and operations requirement including the construction and layout of processing plant, hygienic facilities, equipment, utensils and working surfaces.

6 Preparation and processing

The preparation of fried corn snacks is described herein from the receipt of raw materials until the packing operations.

6.1 Preparation of raw materials

Corn

6.1.1 Receipt of raw materials

Corn shall only be accepted if it is sound and suitable for processing. Those that show signs of deterioration shall not be used.

6.1.2 Inspection and sorting

The corn kernels to be used shall be inspected and sorted according to quality and size before processing (PNS/BAFPS 10:2004. Philippine National Standard. Grains-Corn – Grading and Classification). Sorting may be carried out on moving inspection belts or sorting tables/sieves.

6.1.3 Washing and/or sanitizing

Corn kernels are washed to remove dust, dirt, insect, mold spores, plant parts and filth that might contaminate or affect the color, aroma or flavor of the kernels. Sanitizing agents may be used in the wash or rinse water.

6.1.4 Cooking

The raw corn kernels are cooked in potable water with or without treating agents in accordance to specified processing standards.

6.1.5 Washing

The cooked corn is washed with potable water to remove the treating agent/s.

6.1.6 Frying

Dried corn is subjected to frying in edible oil and drained.

6.1.7 Addition of other ingredients

Food additives and other components for the preparation of the intended fried corn snacks are added to the kernels.

6.1.8 Other treatments

Other treatments may be done to the corn kernels pertaining to drying and adequate processing of the product.

6.2 Packing

Packing can be done either mechanically or manually. It is important to standardize filling for economic reasons. Gas packing or vacuum packing may be done.

6. 3 Closing or sealing of containers

Seams and other closures shall be sealed air-tight to meet the requirements of the processors.

The pouch seal area must be free of food material and wrinkles. Sealing temperature and pressure shall conform to the sealing equipment to be used.

6.4 Coding of sealed containers

Coding of sealed container shall be indelible with details of production date and time, batch code, product code, the product line in which product is packed, the manufacturing plant and other information necessary for product traceability. Where the container does not permit the code to be embossed or inked, the label shall be legibly perforated or otherwise marked, and securely affixed to the product container.

6.5 Post-process container handling

Pouches shall be handled singly rather than in bunches, and care must be exercised so as to prevent damage by roughened contact surfaces.

7 Food additives

Food additives when used shall be in accordance with the regulations established by the Bureau of Food and Drugs (BFAD) (B.C. No.2006-016) Updated List of Food Additives), the Codex Alimentarius Commission and/or authority for these products.

Table 1 – Food Additives for Fried Corn Snacks*
(BFAD B.C. No.016 s. 2006. Updated List of Food Additives)

Food additive	Maximum level
Antioxidants	
Ascorbic acid	GMP
Ascorbyl esters	200mg/kg
BHA	200mg/kg
Propyl gallate	200mg/kg
Phosphates	1300mg/kg
Sorbates	1000mg/kg
Tocopherols	200mg/kg
Humectants	
Any permissible humectants agents as specified by BFAD	GMP
Processing aid	
Calcium carbonate	GMP
Sodium hydroxide	
Sweetening agent	
Any permissible sweetening agents as specified by BFAD	GMP
* Based on the Food Category System: 15.1 Snacks – potato, cereal, flour or starch based (from roots and tubers, pulses and legumes)	

8 Labeling

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

8.1.1 The name of the product shall be "Fried Corn Snacks"". It may have additional descriptors. Ex. Chichacorn/Cornick in Cheese Flavor, Chichacorn/Cornick in Garlic Flavor, Chichacorn/Cornick in Chili Flavor, Chichacorn/Cornick in "Adobo" Flavor.

8.1.2 The complete list of ingredients and food additives used in the preparation of the product in descending order of proportion.

8.1.3 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.

8.1.4 The name and address of the manufacturer, packer and/or distributor of the food.

8.1.5 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.

8.1.6 Lot or code number identifying product lot.

8.1.7 The phrase "Product of the Philippines", or the country of origin if imported.

8.1.8 Additional requirements
A pictorial representation on the label should not mislead the consumer with respect to the product so illustrated.

8.2 Nutrition labeling

Nutrition labeling shall conform to established regulations of BFAD.

9 Quality assurance

9.1 Inspection of finished products

All processed products shall be inspected before labelling and casing and defective products shall be withdrawn or rejected. The company must have an approved policy and procedures based on the BFAD A.O. No. 153 s. 2004 - Guidelines, Current Good Manufacturing Practices in Manufacturing, Packing, Repacking or Holding Food.

9.2 Record keeping

Permanent and legible dated records of time, temperature code mark and other pertinent details shall be kept concerning each lot. Such records are essential as a check on processing operations.

Written records of all container closure examinations shall specify the code lot, the date and time of container closure inspections, the measurements obtained and all the corrective actions taken.

Records shall be maintained identifying initial distribution of the finished product to facilitate, if necessary, the segregation of specific food lots that may have been contaminated or otherwise unfit for intended use.

All process deviations involving failure to satisfy the minimum requirements of the process shall be recorded detailing those deviations and the actions taken.

9.3 Hazard analysis and critical control points (HACCP)

HACCP plan must be developed for each product. Prior to the development of HACCP plan, establishments shall have developed, documented and implemented prerequisite programs based on BFAD's Current Good Manufacturing Practices (cGMP) and Hygiene Control.

Guidelines for the Application of the Hazard Analysis Critical Control Point (HACCP) System (CAC/GL 18-1993) present the recommended sequence and document formats for the application of the HACCP systems.

10 Storage and transport of finished product

Storage and transport conditions of the finished product shall be such that the integrity of the product container, and the safety and quality of the product are not adversely affected.

Cases and cartons must be thoroughly dry. They must be of proper size so that the containers fit snugly and are not subject to damage from movement within the case. They must be strong enough to withstand normal transport.
Extreme temperature fluctuations during storage and transport of the product must be avoided to prevent product deterioration.

11 Laboratory control procedures

Each food processing establishment shall have access to laboratory control of both the processes used and the finished products. All food ingredients and food products declared unfit for human consumption by the laboratory shall be rejected.
Representative samples for each lot or batch shall be taken to assess the safety and quality of the product.

Microbiological laboratory shall be separated from the processing area. No pathogens shall be handled within the premises of manufacturing plant.
Laboratory procedures for quality control of the processes and the product must follow recognized or standard methods for easy interpretation of results.

12 End product specifications

Appropriate methods shall be used for sampling analysis and determinations to meet the following specifications:

12.1 To the extent possible in good manufacturing practices, the products shall be free from any objectionable characteristics.

12.2 The product shall not contain any toxic substances originating from microorganisms and chemicals.

12.3 The product shall be free from chemical pollutants in amounts which may pose hazard to health.

12.4 The product shall comply with the requirements set forth by the Bureau of Food and Drugs and the Codex Alimentarius Commission on Pesticide Residues and Food Additives.

Annex A

Standard parameters and values for drinking water*

Table A.1 – Standard values for bacteriological quality

Source and mode of supply	Bacteria	Standard value (no./100mL)
a. All drinking water supplies under all circumstances (Level I, II, III bottled water and emergency water supplies)	*E.coli* or thermotolerant (fecal) coliform bacteria	0
b. Treated water entering the distribution system	*E.coli* or thermotolerant (fecal) coliform bacteria	0
c. Treated water in the distribution system	*E.coli* or thermotolerant (fecal) coliform bacteria	0
	Total coliforms	Must not be detectable in any 100mL sample. In any case of large quantities where sufficient samples are examined, it must not be present in 95% of samples taken throughout any 12-month period.

Table A.2 – Standard values for physical and chemical quality: aesthetic quality

Constituent maximum or characteristics	Level (mgL)
Taste	Unobjectionable
Odor	Unobjectionable
Color	5 TCU
Turbidity	5 NTU
Aluminum	0.2
Chloride	250
Copper	1
Hardness	300 (as $CaCO_3$)
Hydrogen sulfide	0.05
Iron	1
Manganese	0.5
pH	6.5 – 8.5
Sodium	200
Sulfate	250
Total dissolved solids	500
Zinc	5

* Sec.2 **Philippine National Standards for Drinking Water**. Department of Health, Manila.

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.

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.

Association of Analytical Chemists. **Official Methods of Analysis Manual**. 16th ed., 1995. AOAC International. 481 North Frederick Ave., Suite 500, Gaithersburg, MD 20877-2417. U.S.A.

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

FAO/WHO Codex Alimentarius Commission Procedural Manual. 18th edition. Codex Alimentarius Commission. Food and Agriculture Organization. Viale delle Terme di Caracalla, 00100 Rome, Italy.

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 National Standard No. 991:1993. **Agricultural and Other Food Products – Bottled Drinking Water Specifications**. Bureau of Product Standards. Department of Trade and Industry. Makati City, Philippines.

PNS/BAFPS 10:2004. **Philippine National Standard for Grains-Corn – Grading and Classification**. Bureau of Agriculture and Fisheries Product Standards. Department of Agriculture. Diliman, Quezon City, Philippines.

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

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