

PHILIPPINE NATIONAL STANDARD

PNS/BFAD 14:2007
ICS 67.080

**Recommended code of practice for the processing and
handling of banana chips**



BUREAU OF PRODUCT STANDARDS

Foreword

The Philippine National Standard for Banana chips was the fourth product being developed by the Technical Working Group still under the project entitled “Development of Standards for Selected Ethnic Food Products”.

Prior to the promulgation of this Standard a public consultation was held in Davao City wherein most of the big players such as producers, manufacturers, representatives from the academe, government agencies, laboratory and testing agencies and private organizations were present and actively participated in the discussion on the essential composition and quality factors that provide us relevant inputs in banana chips specification.

Recommended code of practice for the processing and handling of banana chips

1 Scope

This Code of Practice is concerned with the receipt of raw materials and ingredients, preparation and processing of banana chips products as defined in this Code, in order to conform with the required standards stated in PNS/BFAD 13:2007 Standards for Banana Chips. The product shall be prepared from banana fruit of *Musa* variety used for banana chips processing.

This Code is intended to provide guidelines to achieve compliance with the standards for banana chips products packed in any suitable container.

2 Definition of terms

For the purpose of this Code, the following definitions apply:

2.1**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

2.2**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

2.3**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

2.4**food additives**

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

2.5

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

2.6

frying

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

2.7

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

2.8

label

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

2.9

labelling

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

2.10

lot

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

2.11

moisture content

it is the percentage weight of water in relation to the dry weight of the product

2.12

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 or 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

2.13

sweetening agent

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

2.14**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

3 Raw materials, ingredients and packaging material requirements**3.1 Raw materials and ingredients**

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

3.1.1 Banana

Banana fruit variety to be used for processing shall be prepared from sound, clean, mature fruit and is of a quality fit to be sold fresh for human consumption.

3.1.2 Oil

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

3.1.3 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.

3.1.4 Food additives

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

3.1.5 Water

Only clean, potable water (Annex A) shall be used for the preparation and for all the pretreatment and processing steps of beverage 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.

3.2 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.

4 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.

5 Preparation and processing

The preparation of banana chips products is described separately from the receipt of raw materials until the packing operations.

5.1 Preparation of raw materials

5.1.1 Banana

5.1.1.1 Receipt of raw materials

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

5.1.1.2 Inspection and sorting

The banana fruit shall be inspected and sorted according to quality before processing (PNS/BAFPS 08:2004, Philippine National Standard. Banana Saba and Cardaba). Sorting may be carried out on moving inspection belts or sorting tables.

5.1.1.3 Washing and/or sanitizing

Fruit is washed to remove dust, dirt, insect, mold spores, plant parts and filth that might contaminate or affect the color, aroma or flavor of the fruit. Washing with water must be accompanied with brushing, rubbing and forcing the water against the fruit and into crevices. Sanitizing agents may be used in the wash or rinse water.

5.1.1.4 Peeling and slicing

The banana fruit is peeled and sliced according to desired product form.

5.1.1.5 Frying

Sliced banana is subjected to frying in edible oil and drained.

5.1.1.6 Soaking in sugar solution

Fried banana slices may be soaked in sugar solution/honey syrup for a specified soaking time and drained. The banana slices may be subjected to second frying and draining.

5.1.1.7 Addition of other ingredients

Food additives and other components for the preparation of the intended banana chips product are added to the slices.

5.1.2 Other treatments

Other treatments may be done to the banana slices pertaining to drying and adequate processing of the product.

5.2 Cooling

The fried banana slices are cooled, sorted and graded.

5.3 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.

5.4 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.

5.5 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.

5.6 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.

6 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 banana chips*
(BFAD B.C.No.2006-016. Updated list of food additives)

Food additive	Maximum use level	Food additive	Maximum use level
Acesulfame Potassium	500 mg/kg	Diacetyltartaric and fatty acid esters of glycerol	GMP
Aspartame	2000 mg/kg	Sorbitol	GMP
Butylated Hydroxyanisole	100mg/kg	Sucralose	150 mg/kg
Butylated Hydroxytoluene	100 mg/kg	Sulphites (as residual SO ₂)	GMP
Citric acid	GMP	Tartrates (as tartaric acid)	1300 mg/kg
* Based on the Food Category System: 4.1.2.12 Cooked or fried fruit			

7 Labelling

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

7.1.1 The name of the product shall be "Banana Chips". It may have additional name to describe the product. Ex. Honey-dipped Banana Chips, Vacuum-Dried Banana Chips.

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

7.1.3 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.

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

7.1.5 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.

7.1.6 Lot or code number identifying product lot.

7.1.7 The words "Product of the Philippines", or the country of origin if imported.

7.1.8 Additional requirements

A pictorial representation of fruit(s) on the label should not mislead the consumer with respect to the fruit so illustrated.

7.2 Nutrition labelling

Nutrition labelling shall conform to established regulations of BFAD.

8 Quality assurance

8.1 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.

8.2 Record keeping

Permanent and legible dated records of time, temperature code mark and other pertinent details shall be kept concerning each load. 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.

8.3 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.

9 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.

10 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.

11 End product specifications

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

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

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

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

11.4 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)	<i>E.coli</i> or thermotolerant (fecal) coliform bacteria	0
b. Treated water entering the distribution system	<i>E.coli</i> or thermotolerant (fecal) coliform bacteria	0
c. Treated water in the distribution system	<i>E.coli</i> 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

References

PNS/BFAD 14:2007

The following documents contain provisions that, through reference in this text, constitute provisions of this standard. For undated references, the latest edition of the referenced document (including 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.

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

Codex Standard 130-1981. **Codex Standard for Dried Apricots.** Codex Alimentarius Commission. Food and Agriculture Organization. Viale delle Terme di Caracalla, 00100 Rome, Italy.

Enhancing the Productivity of Saba Industry. 2001. **Subproject 3. Development/Improvement of Processing Technologies and Quality Assurance Program for Saba.** Industrial Technology Development Institute. Department of Science and Technology. Bicutan, Taguig City, Philippines.

FAO/WHO Codex Alimentarius Commission Manual. 1995. 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.

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PNS/BAFPS 08:2004. **Banana Saba & Cardaba.** 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.

B P S

BUREAU OF PRODUCT STANDARDS
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The use of the PS Certification Mark is governed by the provisions of Department Administrative Order No. 01 series of 1997 – Revised Rules and Regulations Concerning the Philippine Standard (PS) Quality and / or Safety Certification Mark Scheme by the Bureau of Product Standards. This mark on a product/container is an assurance by the manufacturer/producer that the product conforms with the requirements of a Philippine standard. Details of conditions under which a license to use the PS Certification Mark may be granted can be obtained from the Bureau of Product Standards, Department of Trade and Industry, 361 Sen. Gil J. Puyat Avenue, Makati City.



FORMULATING BODY
Development of Standard for Selected Ethnic Food Products
Standard for Thermally Processed Fish Products

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