

PHILIPPINE NATIONAL STANDARD

PNS/FDA 41:2015
ICS 67.020

Code of practice for the processing and handling
of banana ketchup



BUREAU OF PRODUCT STANDARDS*

Foreword

This Philippine National Standard for Banana Ketchup was developed under the project of the Food Processing Division, Industrial Technology Development Institute (ITDI) of the Department of Science and Technology (DOST).

The Standard for Banana Ketchup and its Code of Practice were reviewed, finalized and endorsed by the Food and Drug Administration (FDA) of the Department of Health (DOH) and approved for adoption as the Philippine National Standard by the Bureau of Philippine Standards.

Public consultation workshops were held in the regions where the product is being manufactured abundantly. Stakeholders from different agencies and offices contributed their expertise for the finalization of the draft.

The standard was developed in response to the need for high standards of the products, guidance for assurance of its quality and safety, harmonization with export requirements, thus, having Philippine processed food products competitive in the world market.

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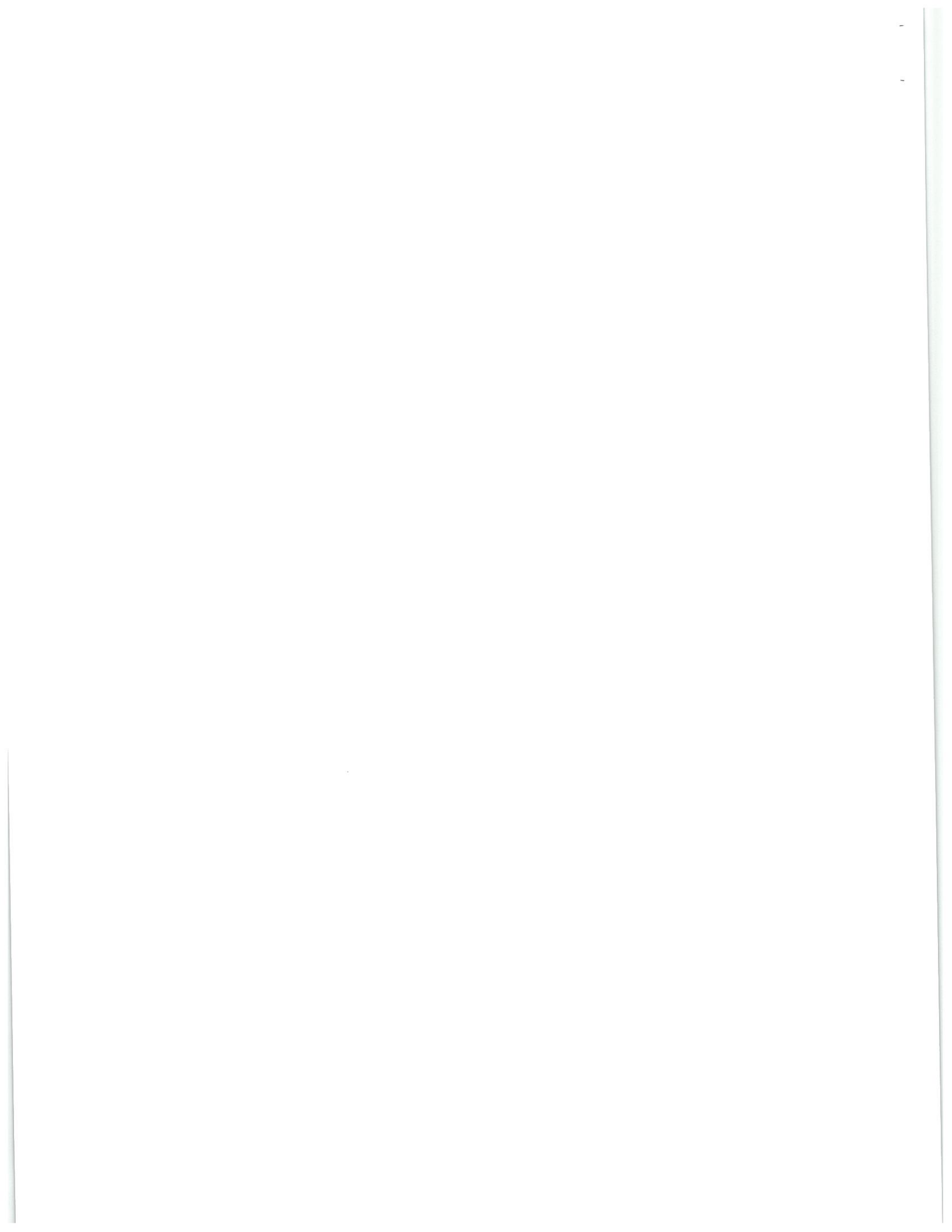
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Code of practice for the processing and handling of banana ketchup

1 Scope

This Code of Practice is a set of recommended procedures that shall be adopted by processors of banana ketchup to conform to the Standards for Banana Ketchup (PNS/FDA 40:2015).

This code provides a guide in the production, storage and handling of banana ketchup necessary to maintain its safety and quality from the receipt of raw materials and ingredients up to distribution.

2 References

The titles of the standards and publications referred to in this Standard are listed in the inside back cover.

3 Definitions

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

3.1**banana powder**

green or unripe banana pulp which have been dried and ground

3.2**banana purée**

the mashed or macerated banana pulp.

3.3**consistency**

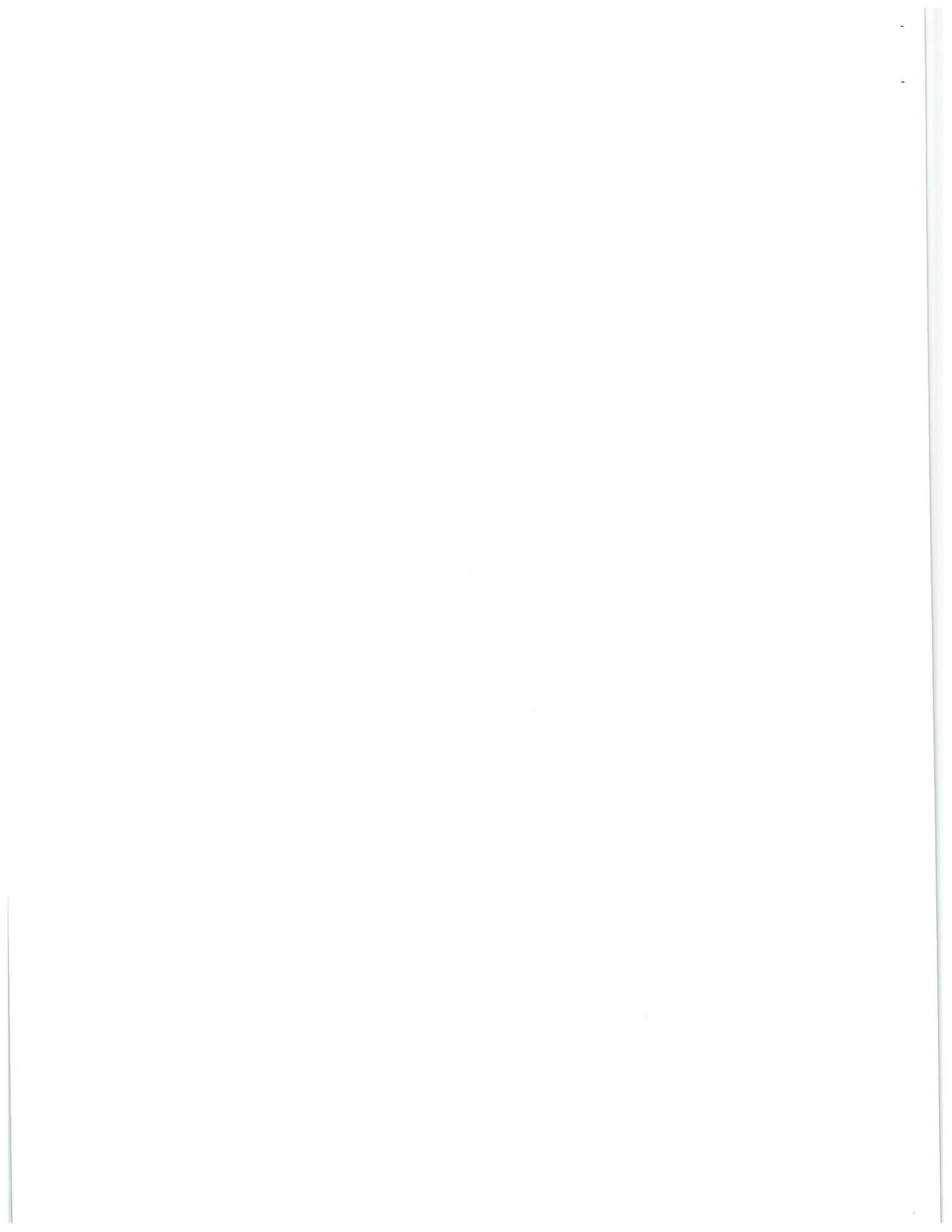
the resistance of the banana ketchup to deformation or resistance to flow i.e., apparent viscosity and the tendency to hold its liquid portion in suspension

3.4**container**

any form of packaging material, which completely or partially encloses the food and includes 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

3.5**current Good Manufacturing Practices (cGMP)**

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



3.6**food**

any processed substance which is intended for human consumption and includes drink for man, beverages, chewing gum and any substances, which have been used as an ingredient in the manufacture, preparation or treatment of food

3.7**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

3.8**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

3.9**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

3.10**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 through the outside container or wrapper

3.11**labeling**

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

3.12**lot**

quantity of food product produced under essentially the same conditions during a particular production schedule

3.13**maximum use level of an additive**

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

3.14**packaging**

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**pasteurization**

the heating of food at 100°C or below for a specified time which inactivates most of the vegetative forms of spoilage microorganisms

3.16**pH**

the measure of the intensity or degree of acidity of a food material

3.17**prepackaged**

packaged or made up in advance in a container, ready for sale to the consumer, or for catering purposes

3.18**processed food**

the product, resulting from the application of physical, chemical or biological processes to a "primary food commodity" intended for direct sale to the consumer, for direct use as an ingredient in the manufacture of food or for further processing

3.19**spices**

aromatic plants or parts of plants, e.g. roots, leaves or seeds, in various forms (native, dried, ground, whole) used primarily for their flavor rather than for any nutritional benefit

3.20**syneresis**

the separation or leakage of liquid caused by the release of moisture from the breakdown of the gel structure upon standing

3.21**thickener**

a food additive, which increases the viscosity of a food

3.22**Total Soluble Solids (TSS)**

the total amount of particles that can be dissolved in fluids, especially water (IFIS, 2005). It is usually measured using a refractometer or a hydrometer

4 Ingredients and Packaging Material Requirements**4.1 Basic Ingredients**

4.1.1 Water - shall be water fit for human consumption and meets the potability requirements prescribed in the Philippine National Standards for Drinking Water as per DOH Administrative Order No. 2007-0012 (Annex A), and/or its future amendments.

4.1.2 Banana - shall be any acceptable banana variety (*Musa* spp.) as fresh fruits or processed forms, such as banana purée and banana powder, which are sound, wholesome and fit for human consumption. The fresh banana used should meet the PNS Standards for Banana ((PNS/BAFPS 64:2008 - ICS 67.080) and *Saba* and *Cardaba* Bananas (PNS/BAFPS 08:2004 - ICS 65.020.20), and/or applicable standards. Varieties of bananas to be used may include, but not limited to those listed in Annex B.

4.1.3 Vinegar – shall be a liquid acidulant produced from successive and acetous fermentation of food substrates like sugar cane, fruits, vegetables and cereals, and their derivatives. It shall conform to all applicable standards.

4.1.4 Sugar – shall be food grade sugar that conforms to all applicable standards.

4.1.5 Salt - shall be of food grade quality and meets the requirements and standards for iodized salt as per R.A. No. 8172 (Annex C), and/or all applicable standards. The updated standard for iodine levels of salt is provided in Annex D.

4.1.6 Spices - shall be in fresh or processed forms of one or more of the following spices: onions, garlic, pepper and chili.

4.1.7 Food colors - shall of food grade quality and conform to all applicable standards

4.2 Optional Ingredients

These ingredients shall be of food grade quality and conform to all applicable standards, which may include thickening agents, sweetening agents, food flavors, herbs and other spices.

4.3 Food Additives

Food additives when used shall be in accordance with the regulations prescribed by Food and Drug Administration (FDA) B.C. No. 016, s. 2006: Updated List of Food Additives) and the Codex General Standard for Food Additives (GSFA) Codex Stan 192-1995; 2011 Revision), and/or their future amendments. The food additives listed

but not limited to those in Table 1 may be used for the manufacture of banana ketchup.

Table 1 - Food Additives for Banana ketchup

Functional Class	Codex INS No.	Food Additive	Maximum Use Level
Acidity regulator	260	Acetic acid, glacial**	GMP
Sweeteners	950	Acesulfame potassium	1000mg/kg
	955	Sucralose*	450 mg/kg
	951	Aspartame*	350 mg/kg
	961	Neotame**	70 mg/kg
	954(i)	Saccharin*	160 mg/kg
	960	Steviol glycoside*	350 mg/kg
Preservatives	211	Sodium benzoate*	1000mg/kg
	202	Potassium sorbate*	1000mg/kg
	220	Sulfur dioxide*	300mg/kg
Food Colors	129	Allura red AC (FD&C Red #40)*	300 mg/kg
	133	Brilliant Blue FCF (FD&C Blue #1)*	100 mg/kg
	102	Tartrazine (FD&C Yellow #5)***	500 mg/kg
	110	Sunset yellow FCF (FD&C Yellow # 6)	300 mg/kg
	124	Ponceau 4R (Cochineal red A)*	50mg/kg
	171	Titanium dioxide**	GMP
Stabilizer/ thickener	415	Xanthan gum**	GMP
	468	Cross-linked carboxy methyl cellulose (CMC) or cross-linked cellulose gum**	GMP
	1403	Bleached starch**	GMP
	1405	Starches, enzyme treated**	GMP

* Based on the Food Category System No. 12.6 – Sauces and like products (GFSA)
 ** Based on Additives Permitted for Use in Food in General, unless otherwise specified, in accordance GMP (GFSA)
 *** Based on Philippine FDA BC 2006-016

All other food additives not included in the above list shall be allowed as carry-over, provided they are approved by the FDA regulation and shall be in accordance to Section 5.2 of the “Principle Relating to the Carry-Over of Food Additives into Foods” (CAC/Vol. 1, 1991), and/or its future amendments.

4.4 Packaging Materials

The packaging materials should be appropriate for banana ketchup and for the expected conditions of handling during distribution and storage. These should provide adequate protection from contamination for the products 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. A plastic overwrap is recommended for the packaging materials in bulk during storage.

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 FDA A.O. No. 153 s. 2004 - Guidelines, Current Good Manufacturing Practices in Manufacturing, Packing, Repacking or Holding Food, and/or their future amendments, 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 production of banana ketchup is described from the receipt of raw materials up to product storage. The production process should be supervised by personnel with adequate technical training and experience.

6.1 Preparation of Packaging materials

All packaging materials should be inspected during purchase and properly stored in a clean and sanitary manner. They should not transmit to the product objectionable substances and should provide appropriate protection from contamination. They should be inspected during purchase and prior to use.

Only clean packaging materials are used for processing. They should be cleaned manually or mechanically.

6.1.1 Glass bottles

These are manually cleaned by washing with appropriate detergent and rinsed with clean water. A final rinse of water containing appropriate sanitizer is recommended. The bottles are dried upside down on a racks or trays. For mechanical washing, bottles are in an inverted position by suitable cleaning equipment using hot water jets or sprays, which usually makes the bottles dry after washing.

Inspection is particularly important in the case of glass bottles which might possibly contain fragments of glass and glass defects which are difficult to see. Glass bottles may also be re-used provided that they have undergone thorough cleaning and sanitizing, and should be so cleaned and maintained as not to constitute a source of contamination to the product.

6.1.2 Plastic bottles

Only unused appropriate plastic bottles that do not impart objectionable odor and flavor to the product should be used. They should be cleaned as those of glass bottles and should be inspected for for punctures, leakage and other abnormalities.

6.1.3 Flexible containers

These shall be free from pinholes, scratches, blisters and gross closure defects that may affect the integrity of the package. The seal area must be free from contamination and wrinkles and shall provide a hermetic seal upon closure.

6.2 Receipt of Ingredients

Prior to introduction to processing line, raw materials and ingredients should be inspected and sorted as required to remove unfit materials. Such operations should be carried out in a clean and sanitary manner.

The basic and optional ingredients for banana ketchup should conform to the requirements of Sub-section 3.1 (Ingredients) and are properly packed in appropriate packaging materials. No ingredients, which have indications of deterioration, decomposition or contamination to an extent which renders them unfit for human consumption, shall be used for processing. Whenever applicable, certificates of analyses (COA) from raw materials and ingredient suppliers shall be secured to confirm their suitability for processing. Stored stocks of ingredients should be used on a first in - first out (FIFO) or first to expire – first out (FEFO) basis.

6.3 Processing Operations

The manufacture of banana ketchup shall use standardized formulation and process required to achieve the safety and quality criteria as prescribed in Section 5.2 of the Standards for Banana Ketchup (PNS/FDA 40:2014). Any modifications introduced must be tested and validated prior to adoption in commercial processing.

Figure 1, shows the general process in the processing of banana ketchup.

6.3.1 Preparation of raw materials and ingredients

Prior to introduction into the processing line, or at a convenient point within it, raw materials should be inspected, sorted or culled as required to remove unfit materials. Such operations should be carried out in a clean and sanitary manner. Only clean, sound materials should be used in further processing.

Raw materials should be washed as needed to remove soil or other contamination. Water used for such purposes should not be recirculated unless suitably treated to maintain it in a condition as will not constitute a public health hazard. Water used for washing, rinsing, or conveying final food products should be of potable quality.

6.3.1.1 Raw Materials (Banana)

Fresh banana, banana powder and banana puree (frozen or heat treated) are prepared into banana paste while in an appropriate cooking kettle, as follows:

6.3.1.1.1 Fresh Banana. Banana fingers are plucked individually from the banana hands and washed with water to remove adhering dirt, then rinsed with chlorinated water.

The fruits may be cooked in boiling water and cooled. The cooked bananas are manually peeled and ground by using appropriate grinding equipment. Water is added during the grinding process.

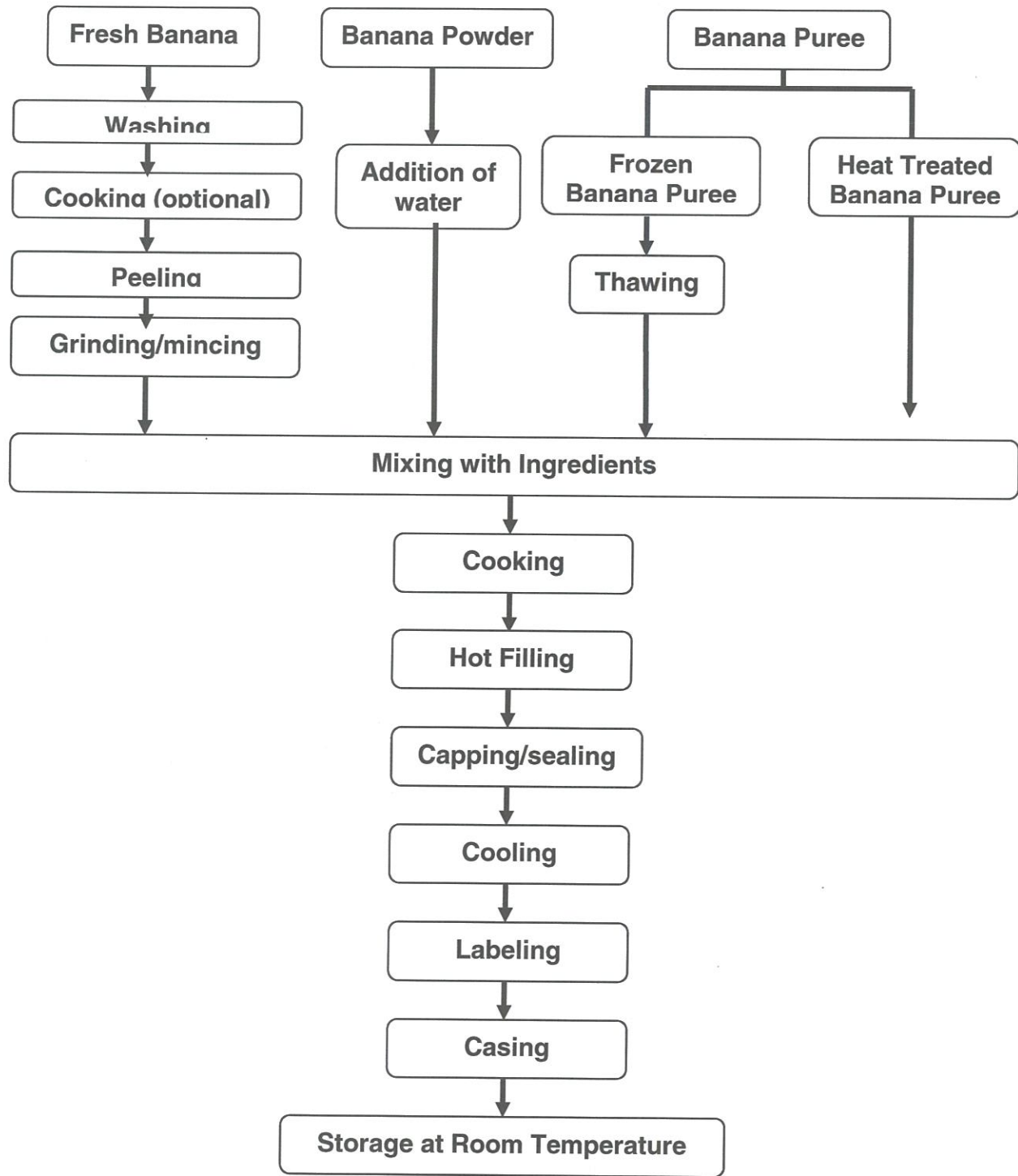


Figure 1 - General process for the manufacture of banana ketchup

6.3.1.1.2 Banana Powder. A measured volume of water is added to the banana powder and mixed to form slurry.

6.3.1.1.3 Banana Puree. Frozen banana puree is thawed at room temperature (28-30°C) for processing.

Heat treated banana puree can be mixed directly with other ingredients.

6.3.1.2 Other Ingredients

6.3.1.2.1 Dry ingredients. Ingredients in powdered or granulated forms, like sugar, spices and food colors, are separately weighed, then mixed together and packed in appropriate container.

6.3.1.2.2 Fresh or raw ingredients. Fresh ingredients like onions, garlic and chili are trimmed of unnecessary parts, washed and drained. Each ingredient is minced and packed in appropriate container.

6.3.1.2.3 Liquid ingredients. Liquid ingredients like water and vinegar are measured by weight or volume.

6.3.2 Mixing

The ingredients are added to banana slurry with continuous mixing/stirring while being heated to completely dissolve the dry ingredients.

6.3.3 Cooking

The cooking process is done to pasteurize the cooked banana ketchup mixture for extended shelf-life. This may be done by the following cooking methods:

6.3.3.1 Batch cooking. The cooking process is done by heating the banana mixture with continuous mixing to a minimum temperature is at least 80°C, maintained for at least 5 minutes.

6.3.3.2 Continuous cooking. The pre-heated banana ketchup mixture is pumped into continuous pasteurizers that where the temperature of the mixture is maintained at appropriate pasteurization temperature (a least 80°C) and holding time. Examples of continuous pasteurizers are plate and tubular heat exchanger.

The heated or pasteurized mixture should comply with the requirements of the PNS Standard for Banana Ketchup (PNS/FDA 40:2014) indicated in Table 2.

6.3.4 Filling and capping containers

The filling process should be done under conditions that prevent the introduction of contamination into the product.

Table 2 - Physico-chemical Requirements for Banana Ketchup

Parameter	Requirement
Consistency, cm in 30 secs at 30°C, max	10
pH, max	4.0
Total Soluble Solids, °Brix ,min	15

6.3.4.1 For banana ketchup mixture heated by batch cooking, the pasteurized mixture is hot-filled (at least 80 °C) into suitable containers by manual filling or using appropriate filling machines. The filled containers are capped or sealed, also by manual sealing or appropriate sealing or closing machines. In automatic filling machines, the sealing or capping step is done immediately after filling.

6.3.4.2 For ketchup mixture heated by continuous cooking, the pasteurized ketchup mixture are continuously filled in containers and immediately sealed or capped sealed using appropriate continuous filling machines.

Glass and plastic bottles should be well filled with the product which should occupy not less than 90% (minus any necessary head space according to good manufacturing practices) of the water capacity of the container. The water capacity of the container is the volume of distilled water at 20°C which the sealed container will hold when completely filled.

Flexible containers should be filled as full as commercially practicable. The sealing surface should be free from defects, damage, or adhering ketchup particles.

6.3.5 Cooling of filled containers

The filled containers are cooled to about 40°C. Cooling may be done by using water bath/spray, or air cooling.

The cooling water should be of potable quality or suitably treated to prevent post-process contamination. If cooling water is recirculated it should be effectively disinfected by chlorine or otherwise before use or each re-use.

6.4 Coding of Packed Products

Coding of packed products in sealed containers shall be made with indelible markers with information details of production, date, batch code, product code, the product line in which the product was packed and other information necessary for product traceability. Whenever 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 package.

6.5 Post-Process Handling

Care must be exercised in the handling and distribution of retail or bulk packaged products or as to prevent mechanical damage and spoilage to the products.

7 Labeling

7.1 General Requirements

Banana ketchup products shall be inspected before labeling and casing. All containers of packaged products shall be properly labeled. The label shall conform to current FDA labeling requirements.

7.2 Labeling of retail packages/ container

Each retail container shall be labeled and marked with the information in accordance with current FDA labeling regulations and shall contain the following information:

7.2.1 The name of the product shall be “banana ketchup”. The product may be called by other common names, such as “banana catchup”, “banana catsup” and “banana ketsup”. It may also be called by other names provided that such names are acceptable in the country of distribution.

7.2.2 The name and the address of either the manufacturer, packer, distributor, importer, exporter or vendor of the food.

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

7.2.4 The net content by weight in the metric system. Other systems of measurement required by importing countries shall appear in parenthesis after the metric system unit.

7.2.5 The words “Consume before or Use by date” or indicating end of period at which the product shall retain its optimum quality attributes at defined storage conditions.

7.2.6 Lot identification marked in code identifying product lot.

7.2.7 The words “Product of the Philippines” for products intended for export, or the country of origin if imported.

7.2.8 Additional requirements

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

7.3 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.

7.4 Nutrition Labeling

Nutrition labeling shall conform to established regulations by the FDA.

8 Quality Assurance

8.1 Inspection of Finished Products

All processed banana ketchup products shall be inspected and should pass the quality criteria prescribed in Section 4 of the Standards for Banana Ketchup (PNS/FDA 40:2014) and the type of defects, as defined in Section 5, in the lot examined must not exceed the acceptable number based on the appropriate sampling plan in Annex E (FAO/WHO Codex Alimentarius Sampling Plans for Prepackaged Foods - CAC/RM 42-1969, Codex Alimentarius Volume 13, 1994).

8.2 Record Keeping

Permanent and legible dated records of production batches, code marks and other pertinent details shall be kept concerning each load. Such records are essential as a check on processing operations.

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

Records 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, shall be kept and maintained.

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 Critical Control Points (HACCP)

Appropriate HACCP plan must be developed for banana ketchup. Prior to the development of HACCP plan, establishments shall have developed, documented and implemented prerequisite programs (PRPs) based on FDA'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 banana ketchup shall be such that the integrity of the product container is protected, 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 and distribution conditions.

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 analyses and 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 randomly taken to assess the safety and quality of the product.

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

11 End Product Specifications

Appropriate methods shall be used for sampling and analyses of banana ketchup to meet the following specifications:

11.1 To the extent possible in good manufacturing practices, the product shall be free from any objectionable matter and parasites harmful to humans.

11.2 The product shall be free from microorganisms in amounts harmful to humans and should not contain any substances originating from microorganisms in amounts which may represent a hazard to health.

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

11.4 The product shall comply with the requirements set forth by the Food and Drug Administration (FDA) and the Codex Alimentarius Commission on Pesticide Residues and Food Additives.

Annex 1
(informative)

Standard Parameters and Values for Drinking Water

Table 1 - Standard values for bacteriological quality

Parameter	Value/Unit	Point of Compliance
Total Coliform	< 1.1 MPN/100 ml	Service Reservoir Water treatment works Consumers' taps Refilling stations Water haulers Water vending machines
Fecal Coliform	< 1.1 MPN/100 ml	Service Reservoir Water treatment works Consumers' taps Refilling stations Water haulers Water vending machines Point sources - Level 1
Heterotrophic Plate Count	< 500 CFU/ml	Service Reservoir Water treatment works Consumers' taps nearest meter Refilling stations Water vending machines

Table 2. Standard values for Physical and Chemical Quality for Acceptability Aspects for Drinking Water

Constituents	Maximum Level (mg/L) or Characteristic	Constituents	Maximum Level (mg/L) or Characteristic
Taste	No objectionable taste	Hydrogen Sulfide	0.05
Odor	No objectionable odor	Iron	1.0
Color	Apparent = 10 color units True = 5 color units	Manganese	0.4
Turbidity	3 NTU	pH	6.5 – 8.5
Aluminum	0.2	Sodium	200
Chloride	250	Sulfate	250
Copper	1.0	Total Dissolved Solids	500
Hardness	300 as CaCO ₃	Zinc	5.0

Table 3 - Standard Values for Organic and Inorganic Chemical Constituents of Health Significance in Drinking Water

Inorganic Chemical	Constituents	Maximum Level (mg/L)	Constituents	Maximum Level (mg/L)
	Antimony	0.02	Fluoride	1.0
	Arsenic	0.05	Lead	1.01
	barium	0.7	Mercury (total)	0.001
	Boron	0.5	Nickel	0.02
	Cadmium	0.003	Nitrate	50
	Chromium (Total)	0.05	Nitrite	3.0
	Cyanide (Total)	0.07	Selenium	0.01
Organic Chemical	Constituents	Maximum Level (mg/L)	Constituents	Maximum Level (mg/L)
	Benzene	0.01	Ethylbenzene	0.30
	Carbon tetrachloride	0.004	Nitilotriacetic acid (NTA)	0.20
	1,2-Dichlorobenzene	0.1	Polyaromatic hydrocarbons (PAHs)	0.20
	1,4-Dichlorobenzene	0.5	Polynuclear aromatic	0.0007
	1,2-Dichloroethane	0.003	Tetrachloroethene	0.02
	1,1-Dichloroethene	0.05	Styrene	0.04
	1,2-Dichloroethene	0.07	Tetrachloroethene	0.70
	Dichloromethane	1.0	Trichloroethene	0.07
	Di(2-ethylhexyl) phthalate	1.01	Vinyl chloride	0.0003
	Edetic Acid (ADTA)	0.001	Xylene	0.5
Organic Pesticide	Constituents		Maximum Level (ug/L)	Status in the Philippines
	Aldrin and Dieldrin (combined)		30.0	Banned
	Atrazine		0.03	Registered
	Carbofuran		2.0	Registered
	Chlordane		7.0	Banned
	DDT **		0.2	Banned
	1,2-Dibromo-3-chloropropane (DBCP)		1.0	Banned
	2,4-Dichlorophenoxyacetic acid (2,4-D)		1.0	Registered
	Endrin		30.	Banned
	1,2-Dibromomethane (Ethylene dibromide)		0.6	Banned
	Heptachlor and Heptachlor epoxide (combined)		0.03	Banned
	Lindane		2.0	Restricted
	MCPA (4-(2-methyl-4-chloro) phenoxy) acetic acid		2.0	Registered
	Pendimethalin		20.0	Registered
	Pentachlorophenol (PCP)		9.0	Banned

Annex 2

Varieties of Bananas (*Musa Spp.*) for the Processing of Banana Ketchup

1. **Saba.** The fruit is a cooking banana with medium to large fruits. The fingers are short, stout and angular in cross section with thick skin that turns yellow when ripe. The fruit is creamy white, fine textured with well developed core.
2. **Cardaba.** The fruit is also a cooking banana very similar to *Saba*, but more vigorous and with larger fruits, with fingers generally longer.
3. **Bungulan.** The fruit is long, slightly curved and slightly angular. The peel is yellow-green when ripened at ambient temperature of 28°C. The flesh is sweet, melting, and aromatic with a creamy color when ripe.
4. **Cavendish.** The fruit is long, slightly curved and slightly angular. The peel is yellow-green when ripened normally and has bright yellow color at ambient temperature of 28 °C. The flesh is sweet, melting, strongly aromatic and with a creamy color when ripe.
5. **Lakatan.** The fruit is long, slightly angular, with thick peel which turns orange-yellow when ripe. The flesh is sweet, aromatic, firm and is light orange-yellow when ripe.
6. **Latundan.** The fruit is short and round. The peel is thin and yellow when ripe. The flesh is white, soft and slightly sub-acid.
7. **Morado.** The fruit is medium size and slightly angular to round. The peel is thick and purplish-red when ripe. The flesh is smooth, melting, sweet, slightly aromatic, and has cream-colored pulp.
8. **Señorita** – The fruit is small, short and round with blunt tips. The peel is thin and yellow when ripe. The flesh is very sweet, smooth, aromatic, melting and has creamy yellow pulp.

Annex 3

Standard for Iodized Salt

1. SCOPE

This standard applies to iodized salt used as condiment or an ingredient in the preparation of food in households, food service and food manufacturing establishments.

2. DESCRIPTION

Iodized salt is food grade salt that contains the prescribed level of iodine. It shall be produced refined or unrefined (crude) salt obtained from underground rock salt deposits or by evaporation of seawater or natural brine. The finished product shall be in the form of solid crystal or powder, white in color, without visible spots of clay, sand, gravel or other foreign matter.

3. IODIZATION PROCESS

Salt may be iodized with potassium iodate (KIO_3) or potassium iodide (KI) by means of any of the following methods:

- a) dry mixing of salt in powdered form
- b) dip feeding or spray mixing if salt is in crystal form
- c) submersion of ice crystals in iodated brine

4. ESSENTIAL COMPOSITION AND QUALITY FACTORS

To ensure the stability of iodine, salt to be iodized must conform with the following quality requirements:

Moisture, minimum	4 % for refined salt
	7 % for unrefined salt
NaCl minimum	97 % dry basis
Calcium and magnesium, maximum	2 %
Water insolubles, maximum	0.2 %
Heavy meal contaminants	
Arsenic as As	0.5 mg/kg
Cadmium as Cd	0.5 mg/kg
Lead as Pb	2.0 mg/kg
Mercury as Hg	0.1 mg/kg

4.1 Naturally Present Secondary Products and Contaminants in Raw Salt

Notwithstanding the purity requirements in section 4.1. the raw salt may naturally contain secondary products, which are present in varying amounts depending on the origin and method of production of salt, and which are composed mainly of calcium, potassium, magnesium and sodium sulphates, carbonates, bromides and of calcium, potassium chlorides as well as natural contaminant may also be present in amounts varying with the origin and method of production of the salt.

5. LABELLING

5.1 Iodized salt for commercial distribution shall carry appropriate labeling in accordance with BFAD rules and regulations on labeling of prepackaged foods. Specifically, the following information shall be declared in every container of iodized salt whether in bulk or retail package.

5.1.1 For locally produced iodized salt

- a) The name of the product, "IODIZED SALT", printed in bold capital letters
- b) Name and address of manufacturer
- c) Net weight
- d) Iodine compound used
- e) Chemical additives, e.g. anti-caking agents, emulsifiers
- f) Open date marking, e.g. "Best Before" or "Consume Before" Date
- g) Lot identification code (replacers must use manufacturer's lot i.d code)
- h) Storage Instruction: STORE IN COOL DRY PLACE

5.1.2 For imported Iodized salt

- a) same as 5.1.1 (a), (c) to (h)
- b) Name and address of Importer/Local Distributor
- c) Country of Origin

5.2 Labeling of Non-retail Containers

In the case of non-retail containers of at least 25 kg of iodized salt, the labelling information required in sections 5.1.1. (b), (d) or in 5.1.2 (b) may not be declared if such bulk packages are intended for delivery to distributors of food manufacturers/institutional users, provided every shipment or delivery is accompanied by a document containing all information in 5.1.1. or 5.1.2.

5.3 Iodine levels based on WHO recommendation

In order to meet national needs, the prescribed levels of iodized salt be indicated below:

	Type of Container	Packages
Sampling point	Bulk (>2 kg)	Retail (<2 kg)
Production site	70-150 g/kg	60-100 mg/kg
Port of entry*	70-150 mg/kg	60-100 mg/kg
Retail site	> 50 mg/kg	> 40 mg/kg
* For imported iodized salt, also at importer's/distributor warehouse		

5. FOOD ADDITIVES

5.1 All additives used, including KIO and KI, and shall be of food grade quality and shall conform to the specifications prescribed by JECFA of the Food Chemicals Codex.

6.1.1 Anti-caking Agents	Maximum Level in the Final Product
6.1.1.1 Coating agents; Carbonate. Calcium/magnesium, Magnesium oxide; Phosphate, Tricalcium; Silicon dioxide, amorphous; Silicates, calcium , magnesium, sodium alumino or sodium or sodium calcium alumino)))))) 20 g/kg singly or in Combination
6.1.1.2. Coating hydrophobic agents, aluminum, calcium, magnesium, potassium or sodium salts of myristic, palmitic or stearic acid)))))) GMP
6.1.1.3 Crystal modifiers: ferrocyanide, calcium, potassium combination or sodium)))))) 10 mg/kg singly or in combination, expressed as {Fe(CN)}
6.1.2. Emulsifiers Polysorbate 80)))))) 10 mg/kg
6.1.3 Processing Aid Dimethylpolysiloxane)))))) 10 mg of residue/kg

7. PACKAGING

All iodized salt shall be packed in woven propylene bags, clean and unused jute bags, or other non-porous material with a lining of high density polyethylene to ensure the retention of appropriate iodine level at the time of consumption.

8. STORAGE, TRANSPORT AND DISPLAY AT RETAIL

In order to minimize avoidable losses of iodine, iodized salt shall not be exposed to any of the following conditions during storage, transport and display at retail outlets:

- a) direct sunlight or near source of strong light
- b) high temperature and humidity
- c) contamination with moisture, e.g. rain, flood, etc.
- d) contamination with dust or filth from the environment

Annex 4

Updated Standards for Iodine level of Salts

October 10, 2007

Bureau Circular
No. 2007-009

Subject: Updated Standards for Iodine level of Salts**I. RATIONALE**

Rule VI, Section 1 a) of the Revised Implementing Rules and Regulations (RIRR) of Republic Act (RS) No. 8172 also known as “An Act Promoting Salt Iodization Nationwide and for other Purposes” identifies Department of Health (DOH), as the lead agency in the implementing the said Act, and that through the Bureau of Food and Drugs (BFAD), the DOH shall set and enforce standards for food-grade iodized salt and monitor the compliance thereof by the food-grade manufacturers/importers, distributors and traders as specified in Section 2 Rule VIII.

The Food Nutrition and Research Institute (FNRI) on 26 May 2007 referred to the BFAD its recommendation on the possible levels of iodine across distribution stages. In particular, the FNRI proposed the following standard for iodine content:

	Type of containers/packaging	
	Bulk (<2 kilograms)	Retail (<2 kilograms)
Iodine Content	40-70 mg/kg	15-40 mg/kg

Also, attached with said letter are syntheses of studies conducted in other countries that provided empirical basis for regulatory decision.

It is emphasized that lowering the standard will harmonize the iodine level with other countries, will reduce cost and will encourage compliance. Also emphasized in the attachments is the international iodine standard which is 15-20 mg/kg.

II. DIRECTIVE

In view of the foregoing considerations, and ease of administration of regulatory standards, the BFAD hereby adopts the following standard for iodine content in pursuant of its mandate provided for in RA 8172.

Iodine Content - 20-70 mg/kg across distribution channels, whether bulk or retail, imported or local

III. REPEALING CLAUSE

Provisions of previous issuances which are contrary to those reflected hereon are modified, and/or repealed accordingly.

IV SEPARABILITY

If any provisions of this Order is declared as unconstitutional, or not valid, the rest of the provisions thereon shall still subsist given their effect in entirety.

V. EFFECTIVITY

This Order shall be effective within fifteen (15) days after publication.

Annex 5

**Codex Alimentarius Sampling Plans for Prepackaged Foods (AQL 6.5)
(CAC/RM 42-1969)
Sampling Plan No. 1 – Normal Operations
Inspection Level 1, AQL 6.5)**

1. Net weight: ≤ 1 kg

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
84,001 – 144,000	48	6
144,000 – 240,000	84	9
More than 240,000	126	13

2. Net weight: >1 kg ≥ 4.5 kg

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	13

3. Net weight > 4.5kg

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 2 - In Case of Disputes
Inspection Level 2, AQL 6.5)**

1. Net weight: ≥ 1 kg

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
84,001 - 144,000	84	9
144,000 - 240,000	126	13
More than 240,000	200	19

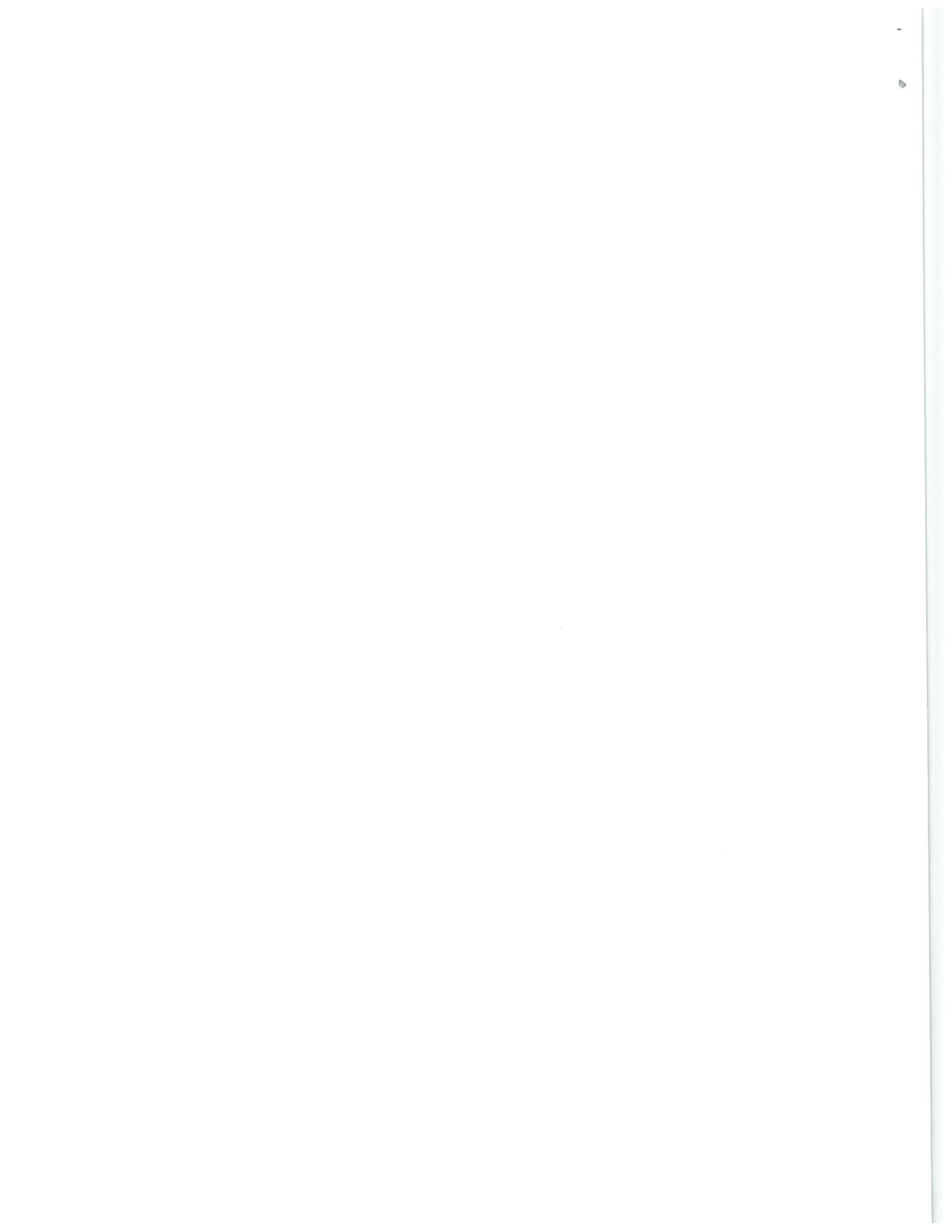
2. Net weight: >1 kg ≥ 4.5 kg

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

3. Net weight > 4.5 kg

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

Source: Codex Alimentarius Sampling Plans for Prepackaged Foods - CAC/RM 42-1969,
Codex Alimentarius Volume 13.



References

PNS/FDA 41:2015

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.

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FOOD STANDARDS FORMULATING BODY
DEVELOPMENT OF STANDARDS FOR BANANA KETCHUP

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