

DRAFT ZANZIBAR NATIONAL STANDARD

Code of hygienic practice for canned fruit and vegetable products

ZANZIBAR BUREAU OF STANDARDS

National Foreword

This Draft Zanzibar National Standard has been prepared by the Fruits and Vegetables Standards Technical Committee. In accordance with the Zanzibar Bureau of Standards general procedures, this draft is here by presented to the public in order to receive any technical comment concerns.
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This draft Zanzibar National Standard was prepared by the Fruits and Vegetables Standards Technical Committee which consists of representatives from the following organizations:

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DRAFT FOR STAKEHOLDER'S COMMENT

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Foreword

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Code of hygienic practice for canned fruit and vegetable products

1 Scope

This African Standards gives code of hygienic practice applies to fruit and vegetable products which are packed in hermetically sealed containers and which are processed by heat either before or after being filled into the containers.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

WHO WA 675, *Guidelines for drinking-water quality*

3 Terms and definitions

For the purpose of this standard the following terms and definitions apply.

3.1

hermetically sealed

air-tight

3.2

container

any hermetic enclosure for food including, but not limited to, metal, glass or laminated plastics.

4 Requirements

4.1 Environmental sanitation in growing and food production areas

4.1.1 Sanitary disposal of human and animal wastes

Adequate precautions should be taken to ensure that human and animal wastes are disposed of in such a manner as not to constitute a public health or hygienic hazard, and extreme care should be taken to protect all food products from contamination with these wastes.

4.1.2 Sanitary quality of irrigation water

Water used for irrigation should not constitute a public health hazard to the consumer through the product.

4.1.3 Animal, plant pest and disease control

Where control measures are undertaken, treatment with chemical, biological or physical agents should be done only in accordance with the recommendations of the appropriate official agency, by or under the direct supervision of personnel with a thorough understanding of the hazards involved, including the possibility of toxic residues being retained by the crop.

4.2 Sanitary harvesting and production of raw materials

4.2.1 Equipment and product containers

Equipment and product containers should not constitute a hazard to health. Containers which are re-used should be of such material and construction to facilitate thorough cleaning, and should be so cleaned and maintained as not to constitute a source of contamination to the product.

4.2.2 Sanitary techniques

Harvesting and production operations, methods and procedures should be clean and hygienic.

4.2.3 Removal of obviously unfit materials

Unfit products should be segregated during harvesting and production to the fullest extent practicable and should be disposed of in such a place and in such a manner that they cannot result in contamination of the food and water supplies or other crops.

4.2.4 Protection of product from contamination

Suitable precautions should be taken to protect the raw product from being contaminated by animals, insects, vermin, birds, chemical or microbiological contaminants or other objectionable substances during handling and storage. The nature of the product and the methods of harvesting shall indicate the type and degree of protection required.

4.3 Transportation

4.3.1 Facilities

Conveyance for transporting the harvested crop or raw product from the production area, place of harvest or storage should be adequate for the purpose intended and should be of such material and construction as shall permit thorough cleaning and should be so cleaned and maintained as not to constitute a source of contamination to the product.

4.3.2 Handling procedures

All handling procedures should prevent the product from being contaminated. Extreme care should be taken in transporting perishable products to prevent spoilage or deterioration. Special equipment such as refrigeration equipment should be used if the nature of the product or distances. If ice is used in contact with the product, it should be of sanitary quality as required in clause 5.1.2.

5 Plant facilities and operating requirements

5.1 Plant construction and layout

5.1.1 Location, size and sanitary design

The building and surrounding area should be:

- a) kept reasonably free of objectionable odours, smoke, dust, or other contamination;
- b) of sufficient size for the purpose intended without crowding of equipment or personnel;
- c) of sound construction and kept in good repair;
- d) of such construction as to protect against the entrance and harbouring of insects or birds or vermin; and

- e) designed as to permit easy and adequate cleaning.

5.1.2 Sanitary facilities and controls

5.1.2.1 Separation of processes

5.1.2.1.1 areas where raw materials are received or stored should be separated from areas in which final product preparation or packaging is conducted as to prevent contamination of the finished product.

5.1.2.1.2 areas and compartments used for storage, manufacture or handling of edible products should be separate and distinct from those used for inedible materials.

5.1.2.1.3 food handling area should be completely separated from any part of the premises used as living quarters.

5.1.2.2 Water supply

An ample supply of hot and cold water should be available. The water supply should be of potable quality. Standards of potability shall not be less than those contained in the WHO guidelines for drinking water.

5.1.2.3 Ice

Ice should be made from water of potable quality and should be manufactured, handled, stored and used, so as to protect it from contamination.

5.1.2.4 Auxiliary water supply

Where non-potable water is used - for such purposes as fire control— it shall be carried in completely separate lines, identified preferably by colour and with no cross-connection or back-siphonage with the lines carrying potable water.

5.1.2.5 Plumbing and waste disposal

5.1.2.5.1 all plumbing and waste disposal lines (including sewer systems) shall be large enough to carry peak loads;

5.1.2.5.2 all lines shall be watertight and have adequate traps and vents;

5.1.2.5.3 disposal of waste should be effected in such a manner as not to permit contamination of potable water supplies.

5.1.2.5.4 the plumbing and the manner of waste disposal should be approved by the official agency having jurisdiction.

5.1.2.6 Disposal of solid or semi-solid wastes

5.1.2.6.1 Removal of solid or semi-solid wastes from the product preparation and canning areas should be on a continuous or near continuous basis using water and/or appropriate equipment so that these areas are kept clean and there is no danger of contaminating the product.

5.1.2.6.2 They should be disposed of in such a way that they cannot be used for human food.

5.1.2.6.3 Waste materials should be disposed of in a place and in such a manner that they cannot contaminate food and water supplies and cannot offer harbourages or breeding places for rodents, insects or other vermin.

5.1.2.7 Lighting and ventilation

5.1.2.7.1 Premises should be well lit and ventilated.

5.1.2.7.2 Special attention should be given to the venting of areas and equipment producing excessive heat, steam, obnoxious fumes or vapours, or contaminating aerosols.

5.1.2.7.3 Good ventilation is important to prevent both condensation (which may drip into the product) and mould growth in overhead structures— which growth may fill into the food.

5.1.2.7.4 Light bulbs and fixtures suspended over food in any step of preparation should be of the safety type or otherwise protected to prevent food contamination in the case of breakage.

5.1.2.8 Toilet-rooms and facilities

5.1.2.8.1 Adequate and convenient toilets should be provided and toilet areas should be equipped with self-closing doors.

5.1.2.8.2 Toilet-rooms should be well lit and ventilated and should not open directly into a food handling area.

5.1.2.8.3 They should be kept in a sanitary condition at all times.

5.1.2.8.4 There should be associated hand-washing facilities within the toilet area and notices should be posted requiring personnel to wash their hands after using the toilet.

5.1.2.9 Hand-washing facilities

5.1.2.10.1 Adequate and convenient facilities for employees to wash and dry their hands should be provided wherever the process demands.

5.1.2.10.2 They should be in full view of the processing floor.

5.1.2.10.3 Single-use towels are recommended, where practicable, but otherwise the method of drying should be approved by the official agency having jurisdiction.

5.1.2.10.4 The facilities should be kept in a sanitary condition at all times.

5.1.2.10.5 Soap and sanitizer should be in appropriate dispensers.

5.2 Equipment and utensils

5.2.1 Materials

All food contact surfaces should be smooth; free from pits, crevices and loose scale; non toxic; unaffected by food products; and capable of withstanding repeated exposure to normal cleaning; and non-absorbent unless the nature of a particular and otherwise acceptable process renders the use of a surface, such as wood, necessary.

5.2.2 Sanitary design, construction and installation

Equipment and utensils should be designed and constructed to prevent hazards and permit easy and thorough cleaning. Stationary equipment should be installed in such a manner to permit easy and thorough cleaning.

5.2.3 Equipment and utensils

Equipment and utensils used for inedible or contaminating materials should be so identified and should not be used for handling edible products.

5.3 Hygienic operating requirements

5.3.1 Sanitary maintenance of plant, facilities and premises

The building, equipment, utensils and all other physical facilities of the plant should be kept in good repair and should be kept clean and maintained in an orderly, sanitary condition. Waste materials should be frequently removed from the working area during plant operation and adequate waste receptacles should be provided. Detergents and disinfectants employed should be appropriate to the purpose and should be so used as to present no hazard to public health.

5.3.2 Vermin control

Effective measures should be taken to protect against the entrance into the premises and the harbourage on the premises of insects, rodents, birds or other vermin.

5.3.3 Exclusion of domestic animals

Dogs, cats and other domestic animals, should be excluded from areas where food is processed or stored.

5.3.4 Personnel health

5.3.4.1 Plant management should advise personnel that any person afflicted with infected wounds, sores, or any illness, notably diarrhea, should immediately report to management.

5.3.4.2 Management should ensure that no person, while known to be affected with a disease capable of being transmitted through food, or known to be a carrier of such disease microorganisms, or while afflicted with infected wounds, sores, or any illness, is permitted to work in any area of a food plant in a capacity in which there is a likelihood of such person contaminating food or food contact surfaces with pathogenic organisms.

5.3.5 Toxic substances

5.3.5.1 All pesticides and other toxic substances should be labelled and stored in separate locked rooms or cabinets and handled only by properly trained personnel.

5.3.5.2 They should be used only by or under the direct supervision of personnel with a thorough understanding of the hazards involved, including the possibility of contamination of the product.

5.3.6 Personnel hygiene and food handling practices

5.3.6.1 All persons working in a food plant should maintain a high degree of personal cleanliness while on duty. Clothing including suitable headdress should be appropriate to the duties being performed and should be kept clean.

5.3.6.2 Hands should be washed as often as necessary to conform to hygienic operating practices.

5.3.6.3 Spitting, eating and the use of tobacco or chewing gum should be prohibited in food handling areas.

5.3.6.4 All necessary precautions should be taken to prevent the contamination of the food product or ingredients with any foreign substance.

5.3.6.5 minor cuts and abrasions on the hands should be appropriately treated and covered with a suitable waterproof dressing. Adequate first-aid facilities should be provided to meet these contingencies so that there is no contamination of the food.

5.3.6.6 gloves used in food handling should be maintained in a sound, clean and sanitary condition; gloves should be made of an impermeable material except where their usage would be inappropriate or incompatible with the work involved. Gloves should not replace hand washing.

5.4 Operating practices and production requirements

5.4.1 Raw material handling

5.4.1.1 Acceptance criteria- The raw material should not be accepted by the plant if known to contain decomposed, toxic or extraneous substances which should not be removed to acceptable levels by normal plant procedures of sorting or preparation.

5.4.1.2 Storage- Raw materials stored on the plant premises should be maintained under conditions that should protect against contamination and infestation and minimize deterioration.

5.4.1.3 Water- Water used for conveying raw material into the plant should be from a source or suitably treated as not to constitute a public health hazard and should be used only by permission of the official agency having jurisdiction.

5.4.2 Inspection and sorting

Prior to introduction into the processing line, or at a convenient point within it, raw materials should be inspected, sorted or discarded 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.

5.4.3 Washing or other preparation

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 not to constitute a public health hazard. Water used for washing, rinsing, or conveying final food products should be potable.

5.4.4 Preparation and processing

Preparatory operations leading to the finished product and the packaging operations should be so timed as to permit quick handling of consecutive units in production under conditions which would prevent contamination, deterioration, spoilage, or the development of infectious or toxigenic microorganisms.

5.4.5 Packaging of finished product

5.4.5.1 Materials- Packaging materials should be stored in a clean and sanitary manner and should not transmit to the product objectionable substances beyond limits acceptable to the official agency having jurisdiction and should provide appropriate protection from contamination.

5.4.5.2 Techniques- Packaging should be done under conditions that preclude the introduction of contamination into the product.

5.4.6 Preservation of the finished product

5.4.6.1 Heat processing- Products packaged in hermetically sealed containers should be processed by heat as to result in a product that is safe and should not spoil under normally expected temperatures of non-refrigerated storage and transportation. Processing conditions for specific formulations of canned foods should be based on the recommendation of technical specialists competent in canning technology. Such processing should be supervised in the cannery by technically competent personnel and be subject to check by the official agency having jurisdiction.

5.4.6.2 Processing records- Should be adequate to identify the processing history should be kept and made available for inspection.

5.4.6.3 Cooling of processed containers- Where processed containers are cooled in water, the water should be potable or suitably treated not to constitute a public health hazard. If cooling water is recirculated, it should be effectively disinfected by chlorine or otherwise before use or each re-use.

5.4.6.4 Decrating and handling of processed containers- After processing and cooling, containers should be handled in such a manner as to avoid contamination of the product. Rough handling of processed cans, especially while they are still wet, should be avoided. Belts, runways and other processed can-conveying equipment should be maintained in good hygienic condition.

5.4.6.5 Inspection of processing containers. Containers should be inspected before labelling and casing and defective containers withdrawn.

5.4.7 Storage and transport of finished product

The finished product should be stored and transported under such conditions to prevent the contamination, or development of pathogenic or toxigenic microorganisms or infestation and protect against deterioration of the product or of the container.

5.5 Sanitation control programme

It is desirable that each plant in its own interest designates a single individual, whose duties are preferably separate from production, to be held responsible for the cleanliness of the plant. The staff member should be well trained in the use of special cleaning tools, methods of disassembling equipment for cleaning, and in the significance of contamination and the hazards involved. Critical areas, equipment and materials should be designated for specific attention as part of a permanent sanitation schedule.

5.6 Laboratory control procedures

In addition to any control by the official agency having jurisdiction, it is desirable that each plant in its own interest should have access to laboratory control of the sanitary quality of products processed. The amount and type of such control should vary with the food product as well as the needs of management. Such control should reject all foods that are unfit for human consumption. Analytical procedures used should follow recognized or standard methods in order that the results may be readily interpreted. For certain products it may also be desirable to check the process by incubation of samples.

6 End product specifications

Appropriate methods should be used for sampling and analysis or determination to meet the following specifications:

- a) to the extent possible in good manufacturing practice the products should be free from objectionable matter;
- b) the products should not contain any pathogenic microorganisms or any toxic substance originating from microorganisms;
- c) the products shall comply with the requirements set forth by the Codex Committees on Pesticide Residues and Food Additives as contained in permitted lists or Codex Commodity Standards; and
- d) products with an equilibrium pH above 4.5 should have received a processing treatment sufficient to destroy all spores of *Clostridium botulinum*, unless growth of surviving spores would be permanently prevented by product characteristics other than pH.

7 Training and competence

7.1 Awareness and responsibilities

7.1.1 All personnel should be aware of their role and responsibility in protecting food from contamination or deterioration. Personnel should have the knowledge and skills necessary to enable them to handle food hygienically. Those who handle cleaning chemicals or other potentially hazardous chemicals should be instructed in proper use to prevent contamination of food.

7.1.2 All those engaged in food operations who come directly or indirectly into contact with food should have sufficient understanding of food hygiene to ensure they have competence appropriate to the operations they are to perform.

7.2.3 Training is important to any food hygiene system and the competence of personnel. Adequate hygiene training, and/or instruction and supervision of all personnel involved in food-related activities contribute to ensuring the safety of food and its suitability for consumption.

7.2 Training programmes

7.2.1 Elements to consider in determining the extent of training required include the following:

- a) nature of hazards associated with the food, for example its ability to sustain growth of pathogenic or spoilage microorganisms, the existence of potential physical contaminants or known allergens;
- b) way the food is produced, processed, handled and packed, including the likelihood of contamination;
- c) extent and nature of processing or further preparation before consumption of the food;
- d) conditions under which the food should be stored;
- e) expected length of time before consumption of the food; and
- f) use and maintenance of instruments and equipment associated with food.

7.2.2 Training programmes should also consider the knowledge and skill levels of the personnel being trained. Topics to be considered for training programmes could include the following as appropriate to a person's duties:

- a) principles of food hygiene applicable to the food business;
- b) measures relevant to the food business that are used to prevent contaminants in food;
- c) importance of good personal hygiene, including proper hand washing and wearing, when needed, appropriate clothing, for food safety;
- d) good hygiene practices applicable to the food business; and
- e) appropriate actions to take when food hygiene problems are observed. In addition, for retail and food service operations, whether personnel have direct customer interaction is a factor in training, since it may be necessary to convey certain information about products (such as allergens) to customers.

7.3 Instruction and supervision

The type of instruction and supervision needed should depend on the size of the business, type of employees, the nature of its activities' and the types of food involved. Managers, supervisors and/or operators/workers should have sufficient knowledge of food hygiene practices to be able to identify

deviations and take necessary action as appropriate to their duties. Periodic assessments of the effectiveness of training and instruction programmes should be made, as well as routine supervision and verification to ensure that procedures are being carried out effectively. Personnel tasked to perform any activities used in food control should be trained adequately to ensure that they are competent to perform their tasks and are aware of the impact of their tasks on the safety and suitability of the food.

7.4 Refresher training

Training programmes should be routinely reviewed and updated where necessary. Systems should be in place to ensure that food handlers and personnel associated with the food business, such as maintenance staff, remain aware of all procedures necessary to maintain the safety and suitability of food. Records should be kept of training activities.

Bibliography

CXC 2-1969; *Code of Hygienic Practice for Canned Fruit and Vegetable Products*

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