
**Code of hygienic practice for canned
fruits and vegetables — Specification**

ICS: 67.080.01

Published by Ethiopian Standards Agency

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Foreword

This Ethiopian Standard has been prepared under the direction of the Technical committee for fruits and vegetable (Tc-13) and published by Ethiopian Standard agency(ESA).

In the preparing this Ethiopian Standard reference has been made to the following:

- Codex alimentarius Vol. 5: 1994.
- Handbook of analysis and quality control for frits and vegetable products. Second edition 1986

Acknowledgement is made for the use of information from the above publication.

Code hygienic practice for canned fruit and vegetable products — Specification

1. Scope

This 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 reference

The following Ethiopian Standard contains provisions, which through references in the text constitute provisions of this Ethiopian Standard. At time of publication, the editions indicated were valid. All standards are subject to revision, and possibility of applying the most recent editions of the Ethiopian Standard and Ethiopian Standard indicated below. Registers of currently valid standards are maintained in the Ethiopian Standard Agency.

. ES 269:2001 Standards for Drinking Water.

3. Definitions

3.1 Hermetically:

sealed means air-tight.

3.2

Container

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

3.3

Heat processed:

shall mean processed by heat to an extent which results in a product that is safe and will not spoil under normally expected temperatures of non-refrigerated storage and transportation.

4. Raw material requirements

4.1 Environmental sanitation in growing and food production areas.

4.1.1 Sanitary disposal of human and animal wastes

Adequate precautions shall be taken to insure 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 shall be taken to protect all food products from contamination with these wastes.

4.1.2 Sanitary quality of irrigation water

Water used for irrigation shall 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 shall 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.

4.1.4 Sanitary harvesting and production of raw food materials

4.1.4.1 Equipment and product containers

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

4.1.4.2 Sanitary techniques

Harvesting and production operations, methods and procedures shall be clean and sanitary.

4.1.4.3 Removal of obviously unfit materials

Unfit products shall be segregated during harvesting and production to the fullest extent practicable and shall be deposited 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.

4.1.4.4 Protection of product from contamination

Suitable precautions shall 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 will indicate the type and degree of protection required.

4.1.5 Transportation

4.1.5.1 Facilities

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

4.1.5.2 Handling procedures

All handling procedures shall be such as will prevent the product from being contaminated. Extreme care shall be taken in transporting perishable products to prevent spoilage or deterioration. Special equipment such as refrigeration equipment shall be used if the nature of the product or distances involved so indicate. If ice is used in contact with the product. It shall be of sanitary quality as required in section 5.1.2.3

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 shall be such as can be kept reasonably free of objectionable odors, smoke, dust, or other contamination; shall be of sufficient size for the purpose intended without crowding of equipment or personnel; shall be of sound construction and kept in good repair; shall be of such construction as to protect against the entrance and harboring of insects or birds or vermin; and shall be so designed as to permit easy and adequate cleaning.

5.1.2 Sanitary facilities and controls

5.1.2.1 Separation of processes

Areas where raw materials are received or stored shall be so separated from areas in which final product preparation or packaging is conducted as to preclude contamination of the finished product. Areas and compartments used for storage, manufacture or handling of edible products shall be separate and distinct from those used for inedible materials. The food handling area shall 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 shall be available. The water supply shall be of potable quality. Standards of portability shall not be less than those contained in ES 269:2001 Standards for Drinking Water.

5.1.2.3 Ice

Ice shall be made from water of potable quality and shall 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 must be carried in completely separate lines, identified preferably by colour and with no cross -connection or back-siphonage with the line carrying potable water.

5.1.2.5 Plumbing and waste disposal

All plumbing and waste disposal lines (including sewer systems) must be large enough to carry peak loads. All lines must be watertight and have adequate traps and vents. Disposal of waste shall be effected in such a manner as not to permit contamination of potable water supplies. The plumbing and the manner of waste disposal shall be approved by the official agency having jurisdiction.

5.1.2.6 Removal of solid or semi-solid wastes

From the product preparation and conning areas shall 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. Also they shall be disposed of in a way that they cannot be used for human food. Waste materials shall 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

Premises shall be well lit and ventilated. Special attention shall be given to the venting of areas and equipment producing excessive heat, steam, obnoxious fumes or vapours, or contaminating aerosols. Good ventilation is important to prevent both condensation (which may drip in to the product) and mould growth in overhead structures – which growth may fill into the food. Light bulbs and fixtures suspended over food in any step of preparation shall be of the safety type of otherwise protected to prevent food contamination in the case of breakage.

5.1.2.8 Toilet-rooms and facilities

Adequate and convenient toilets should be provided and toilet areas shall be equipped with self -closing doors. Toilet-rooms shall be well lit and ventilated and shall not open directly into a food handling area. They shall be kept in a sanitary condition at all times. There shall be associated hand -washing facilities within the toilet area and notices shall be posted requiring personnel to wash their hands after using the toilet.

5.1.2.9 Hand-washing facilities

Adequate and convenient facilities for employees to wash and dry their hands shall be provided wherever the process demands. They shall be in full view of the processing floor. Single-use towels are recommended, where practicable, but otherwise the method of drying shall be approved by the official agency having jurisdiction. The facilities shall be kept in a sanitary condition at all times.

5.2 Equipment and Utensils

5.2.1 Materials

All food contact surfaces shall 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 shall be so designed and constructed as will prevent hygienic hazards and permit easy and thorough cleaning. Stationary equipment shall be installed in such a manner as will permit easy and thorough cleaning.

5.2.3 Equipment and utensils

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

5.3 Hygienic Operating Requirements

While additional and more specific requirements may be established for certain products, the following shall apply as minimal in all food production, handling, storage and distribution.

5.3.1 Sanitary maintenance of plant, facilities and premises

The building, equipment, utensils and all other physical facilities of the plant shall be kept in good repair and shall be kept clean and maintained in an orderly, sanitary condition. Waste materials shall be frequently removed from the working area during plant operation and adequate waste receptacles shall be provided. Detergents and

disinfectants employed shall be appropriate to the purpose and shall be so used as to present no hazard to public health.

5.3.2 Vermin control

Effective measures shall 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, shall be excluded from areas where food is processed or stored.

5.3.4 Personnel health

Plant management shall advise personnel that any person afflicted with infected wounds, sores, or any illness, notably diarrhea, shall immediately report to management. Management shall take care to 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

All rodenticides, fumigants, insecticides or other toxic substances shall be stored in separate locked rooms or cabinets and handled only by properly trained personnel. They shall 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 shall maintain a high degree of personal cleanliness while on duty. Clothing including suitable headwear shall be appropriate to the duties being performed and shall be kept clean.

5.3.6.2 Hands shall 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 shall be prohibited in food handling areas.

5.3.6.4 All necessary precautions shall 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 shall be appropriately treated and covered with a suitable waterproof dressing. Adequate first-aid facilities shall be provided to meet these contingencies so that there is no contamination of the food.

5.3.6.6 Gloves used in food handling shall be maintained in a sound, clean and sanitary condition ; gloves shall be made of an impermeable material except where their usage would be inappropriate or incompatible with the work involved.

5.4 Operating practices and production requirements.

5.4.1 Raw material handling.

5.4.1.1 Acceptance Criteria

The raw material shall not be accepted by the plant if known to contain decomposed, toxic or extraneous substances, which will 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 shall be maintained under conditions. That will protect against contamination and infestation and minimize deterioration.

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

5.4.2.4 Inspection and Sorting

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

5.4.2.5 Washing or other preparation

Raw materials shall be washed as needed to remove soil or other contamination. Water used for such purposes shall 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 shall be of potable quality.

5.4.2.6 Preparation and processing

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

5.4.2.7 Packaging of finished product.

5.4.2.8 Materials

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

5.4.2.10 Techniques

Packing shall be done under conditions that preclude the introduction of contamination into the product.

5.5 Preservation of the finished product

5.5.1 Heat processing

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

5.5.2 Cooling of processed containers

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

5.5.3 Decrating and handling of processed containers

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

5.5.4 Inspection of processing containers

Containers shall be inspected before labelling and casing and defective containers withdrawn.

5.6 Storage and transport of finished product.

The finished product shall be stored and transported under such conditions as will preclude the contamination with, or development of pathogenic or toxigenic microorganisms or infestation and protect against deterioration of the product or of the container.

5. Sanitation control programme.

It is desirable that each plant in its own interest designates a single individual, whose duties are preferably divorced from production, to be held responsible for the cleanliness of the plant. His staff shall be a permanent part of the organization and shall 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 shall be designated for specific attention as part of a permanent sanitation schedule.

5.8 Laboratory control procedures.

In addition to any control by the official agency having jurisdiction, it is desirable that each plant in its own interest shall have access to laboratory control of the sanitary quality of products processed. The amount and type of such

control will vary with the food product as well as the needs of management. Such control shall reject all foods that are unfit for human consumption. Analytical procedures used shall follow recognized or standard methods in order that the results may be readily interpreted. For certain product it may also be desirable to check the process by incubation of samples.

6 End product specifications.

Appropriate methods shall be used for sampling and analysis or determination to meet the following specifications.

6.1 To the extent possible is good manufacturing practice the products shall be free from objectionable matter.

6.2 The products shall not contain any pathogenic microorganisms or any toxic substance originating from microorganisms.

6.3 The products shall comply with the requirements set forth in specific products on pesticide residues and permitted food additives

6.4 Products with an equilibrium pH above 4.5 shall 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.



Organization and Objectives

The Ethiopian Standards Agency (ESA) is the national standards body of Ethiopia established in 2010 based on regulation No. 193/2010. ESA is established due to the restructuring of Quality and Standards Authority of Ethiopia (QSAE) which was established in 1998.

ESA's objectives are:-

- ❖ Develop Ethiopian standards and establish a system that enable to check whether goods and services are in compliance with the required standards,
- ❖ Facilitate the country's technology transfer through the use of standards,
- ❖ Develop national standards for local products and services so as to make them competitive in the international market.

Ethiopian Standards

The Ethiopian Standards are developed by national technical committees which are composed of different stakeholders consisting of educational Institutions, research institutes, government organizations, certification, inspection, and testing organizations, regulatory bodies, consumer association etc. The requirements and/or recommendations contained in Ethiopian Standards are consensus based that reflects the interest of the TC representatives and also of comments received from the public and other sources. Ethiopian Standards are approved by the National Standardization Council and are kept under continuous review after publication and updated regularly to take account of latest scientific and technological changes. Orders for all Ethiopian Standards, International Standard and ASTM standards, including electronic versions, should be addressed to the Documentation and Publication Team at the Head office and Branch (Liaisons) offices. A catalogue of Ethiopian Standards is also available freely and can be accessed in from our website.

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More Information?

Contact us at the following address.

The Head Office of ESA is at Addis Ababa.

☎ 011- 646 06 85, 011- 646 05 65

☎ 011-646 08 80

✉ 2310 Addis Ababa, Ethiopia

E-mail: info@ethiostandards.org,

Website: www.ethiostandards.org



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