
**Code of hygienic practice for poultry
processing**

ICS: 67.120.20

Descriptors: definitions, rawmaterial, requirements, hygiene, equipment, utensils, operating practices, production, laboratory, control, heavy metals, microbiological requirements, pesticide residue

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ES 2790: 2006

National foreword

This Ethiopian Standard has been prepared under the direction of Agricultural and Food Technology Technical Committee and published by the Quality and standards Authority of Ethiopia (QSAE).

In preparing this Ethiopian Standard references have been made from the following

- Codex Alimentarius Vol. 10-1994
- Codex Alimentarius, General requirements (food hygiene.) Second edition (Revised 2001)

Acknowledgement is made for the use of information from the above publications

Code of hygienic practice for poultry processing

1 Scope

This code is concerned with all poultry, poultry carcasses, poultry parts and other edible materials, that have been chilled or frozen and are intended for human consumption, whether by direct sale as such or through further processing.

It applies to all premises in which poultry is slaughtered, processed, packed, or otherwise handled in the course of preparation. It also applies to conditions of transport from all such premises.

2 Normative references

The following Ethiopian Standard contains provisions, which through reference to this text constitute provisions of this Ethiopian Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this Ethiopian Standard are encouraged to investigate the possibility of the most recent editions of the Ethiopian Standards indicated below. Registers of currently valid standards are maintained in the Quality and Standards Authority of Ethiopia.

ES 269:2001, Drinking water -Specification

ES 577:2001, General Principles of Food Hygiene.

ES ISO 6579:2002, Microbiology- General guidance on methods for the detection of salmonella

ES ISO 4833:2001, Microbiology of food and animal feeding stuffs- Horizontal method for the enumeration of microorganisms- Colony- count technique at 30 °C.

ES ISO 7251:2001, Microbiology - General guidance for enumeration of presumptive *Escherichia coli* - Most probable number technique

ES 989:2004, Lead in food Atomic absorption spectrometric method

ES 1117:2006, Tin in canned foods Atomic absorption

ES ISO 17604:2006, Microbiology of food and animal feeding stuffs — Carcass sampling for microbiological analysis

ES ISO 10272:2006, Microbiology of food and animal feeding stuffs - Horizontal method for detection of thermo tolerant *Campylobacter*

ES ISO 10273:2006, Microbiology of food and animal feeding stuffs — Horizontal method for the detection of presumptive pathogenic *Yersinia enterocolitica*

ES ISO 5552:2006, Meat and meat products — Detection and enumeration of Enterobacteriaceae without Resuscitation — MPN technique and colony-count

ES ISO 13720:2006, Meat and meat products - Enumeration of *Pseudomonas* spp.

3 Definitions

For the purposes of this code, the following definitions shall apply:

3.1

Poultry

shall mean any domesticated bird including chickens, turkeys, ducks, geese, guinea fowls, or pigeons.

3.2

Carcass

shall mean the whole of a bird after stunning, bleeding, plucking and eviscerating. However, removal of the legs at the tarsus, or of the head is optional.

3.3

Giblets

shall mean the liver from which the bile sac (gall bladder) has been removed, the heart with or without the pericardial sac and the gizzard from which the lining and contents have been removed and any other material considered as edible by the consuming country, provided that all such material has been properly trimmed and washed.

4 Raw material requirements

4.1 Environmental hygiene in raw food material production areas

4.1.1 Sanitary disposal of human and animal wastes. Adequate precautions shall 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 shall be taken to protect products from contamination with these wastes.

All droppings, litter, scrapings, etc. from cages, crates and vehicles shall be removed at least once daily. Arrangements for the disposal of trade refuse shall be approved by the appropriate official agency. A separate refuse room or other equally adequate storage facilities shall be provided on the premises and shall be emptied and thoroughly cleaned and disinfected at least once daily.

4.1.2 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.

4.2 Sanitary food production

4.2.1 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 thorough cleaning, and shall be so cleaned and maintained as not to constitute a source of contamination to the product.

4.2.2 Sanitary techniques. Any live poultry holding section and attendant processes such as egg collection shall be quite separate from the slaughtering and poultry packing section. This applies particularly to the disposal of refuse and storage of poultry feeding-stuffs.

4.2.3 Removal of obviously unfit materials. It is recommended that unfit birds shall be segregated prior to delivery to the processing plant. Similarly, on arrival, unfit birds shall be removed as soon as possible and segregated for disposal in an appropriate manner. Arrangements for removal and segregation shall be approved by the official agency having jurisdiction.

4.2.4 Protection of product from contamination. Suitable precautions shall be taken to protect the birds from being contaminated by animals, insects, vermin, other birds, chemical or microbiological contaminants or other objectionable substances during handling and holding.

4.3 Transportation

4.3.1 Facilities. Conveyances and crates for transporting the live birds from the production areas 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, disinfected and maintained as not to constitute a source of contamination.

5 Plant, facilities, and operating requirements

5.1 Plant registration, construction and Layout

5.1.2 Registration, size and sanitary design. The building and surrounding area shall be such as can be kept reasonably free of objectionable odours, 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 harbouring of insects or birds or vermin; and shall be so designed as to permit easy and adequate cleaning.

Whether existing buildings are being adapted or new premises are being built, early consultation with the appropriate official agency is essential.

A proper workflow is necessary to secure good hygiene standards. An example of a suitable workflow with physical separation of the processes is illustrated in annex, A which can be adapted according to requirements.

5.1.2.1 Roadways and yards.

Roadways and yards in the immediate vicinity of and serving the premises shall have a hard, paved surface which is suitable for wheeled traffic, and shall have provision for thorough cleaning where necessary and adequate drainage.

5.1.2.2 Walls, ceilings and floors.

Walls shall be finished to a smooth, non-absorbent, washable surface, be light in colour, and the junction between walls and floor shall be covered or splayed to facilitate cleaning. Ceilings shall be so constructed and finished as to minimize condensation, mould development, flaking and the lodgment of draft. Floors shall be of durable, impervious non-slip material, free from cracks and open joints and laid to an even surface properly sloped to an adequate drainage system.

Buildings shall preferably have lined roofs but where these are unlined they shall be constructed and finished to minimize condensation, mould development, flaking, and draft, in order to protect against contamination of the product.

5.1.2.3 Wooden materials shall preferably not be used. If its use is unavoidable it shall be kept to a minimum, be of simple design, easy to clean, and be tight fitting to wall surfaces. Doors and jambs shall, where necessary, be fitted on both sides with non-corroding mater or other suitable materials as a protection from impact damage, and doors where necessary shall be fitted with self-closing devices. All external openings and doors and open able external windows shall be equipped to exclude flying insects, where these present a problem. Windowsills shall be splayed at an angle.

5.1.3 Sanitary facilities and controls

5.1.3.1 Separation processes. Areas where birds 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.

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ES 2790:2006

5.1.3.2 Water supply. An ample supply of both hot and cold water shall be available of the potable quality referred to in the General Principles of Food Hygiene ES 577:2001. The water used during the preparation, handling, packing and storing of poultry carcasses, poultry parts and other edible material shall be potable. Samples of the water shall be taken regularly and tested for conformity with the bacteriological and chemical standards.

The appropriate authority may permit in-plant chlorination of water if this is necessary for public health reasons.

Where in-plant chlorination of water is used, the residual content of free chlorine shall not exceed that authorized by the official agency having jurisdiction.

5.1.3.3 Ice. Ice shall be made from water of potable quality conforming to ES 261:2001 and shall be manufactured, handled, stored and used, so as to protect it from contamination.

5.1.3.4 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.

5.1.3.5 Plumbing and waste disposal. All plumbing and waste disposal lines (including sewer systems) shall be large enough to carry peak loads. All lines shall 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.

Sumps or solid matter traps included in the drainage system within the plant shall be emptied and cleaned frequently and at the end of every working day. Every inlet into the drainage system shall be trapped and no drain ventilation pipe shall open into any room.

Any internal open channeling shall be rounded and of sufficient width to allow for easy cleaning, and of minimum efficient depth. Covering grids shall be easily removable for cleaning. Channels shall be flushed frequently during processing and thoroughly cleaned at least once daily.

5.1.3.6 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 vapors or contamination aerosols. Good ventilation is important to prevent both condensation (which may drip into the product) and mould growth in overhead structures - which growth may fall into the food. Light bulbs and fixtures suspended over food in any step of preparation shall be of the safety type or otherwise protected to prevent food contamination in the case of breakage.

Lighting shall have an overall intensity of not less than 325 Lux , and in inspection areas this shall be increased to no less than 540 Lux , shall not affect colors and be properly directed onto the bird.

5.1.3.7 Toilet-rooms and facilities. Adequate and convenient toilets shall 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.

5.1.3.8 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.

Hand washing facilities in workrooms shall not be capable of being operated by hand.

5.2.4.3 Perforated metal drainage surfaces shall be reversible for cleaning purposes.

5.2.4.4 Evisceration troughs shall be constructed of stainless steel or other suitable material. The main water flow shall be in the opposite direction to that in which carcasses are traveling so that the carcass arrives for cooling at the point where clean water enters the trough. Additionally, trickle jets of clean water shall be provided along both sides of the trough, and supplies of running warm water shall also be provided over the troughs for hand rinsing. The troughs shall be arranged to limit the travel of inedible material by the insertion of outlets and containers at strategic points in addition to the main outlet. The number and placing of the outlets shall prevent build-up of

material in the troughs and shall be commensurate with the rate of flow of production, the design of equipment and other relevant variable factors. Particular attention shall be paid to the provision of adequate outlets where the trough is longer than 10 meters.

5.2.4.5 Storage containers for inedible material shall be leak-proof, constructed of metal or other suitable impervious material, which is easy to clean, and be covered with close-fitting lids. Where chutes or other continuous disposal methods are used they shall be so constructed as to protect against contamination or offensive odours.

5.2.4.6 Premises where poultry carcasses, poultry parts, and other edible material are kept shall have adequate refrigerated storage.

5.2.4.7 Equipment used for chilling the carcasses and edible material shall be constructed of stainless steel or other suitable material and shall be so operated as to protect against the build-up of microorganisms. Spin chillers and other processes of chilling in a common tank, when their used is not prohibited by national legislation, shall be operated in accordance with the requirements established by the official agency having jurisdiction.

5.2.4.8 Compounds used in spray or immersion freezing procedures shall be acceptable to the appropriate official agency.

5.2 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 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.

5.3.1.1 These operations shall be under the supervision of an appropriately qualified person, approved by the official agency having jurisdiction.

5.3.1.2 Cleaning routine. Premises, equipment and utensils shall be cleaned at frequent intervals during the day. They shall be cleaned and disinfected, immediately and thoroughly, whenever circumstances demand it, such as when they have been in contact with diseased or infected materials. Additionally, they shall be cleaned and disinfected at the end of each working day.

5.1.3.3 Accommodation for clothing and footwear. Suitable and sufficient accommodation for keeping clothing and footwear not worn during working hours shall be provided. Such accommodation shall be separate from any processing room.

5.1.3.4 to ensure birds are protected from infectious agents and poultry diseases the processors shall consider the following points

- a) Traffic control e.g. visitors, requirements, deliveries,(feed, chicken) including a visitor book to track movements on and off the processing area
- b) Cleaning out of poultry houses and equipment, this is to be carried out prior to new batches
- c) Waste disposal (e.g. dead birds) are to be disposed off in an appropriate manner i.e. sealed and secure disposal pit
- d) Signage shall be used to highlight no unauthorized entry to restrict access to processing area.
- e) Minimize wild bird and rodent entering sheds by netting of all enclosures and discourage the attraction of wild birds and rodents into housing by keeping feed and water points inside the sheds.
- f) Purchase poultry feed and litter from approved suppliers who have in place Quality Assurance programs that meet set standards.

5.3 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. Suitable, easily accessible equipment for the cleaning and disaffection of hand tools by means of hot water shall be provided in workrooms.

Equipment and utensils used for condemned, inedible or contaminating materials shall be so identified and shall not be used for handling edible products. Processing equipment and utensils used for slaughtering and packing shall be used for these purposes only.

5.2.3 Bleeding and blood collection. Bleeding equipment, including blood tunnels and blood containers, shall be constructed of non-corrodible metal or other suitable material which is easy to clean. They shall be thoroughly cleaned after major breaks during working periods and at the end of the day. Blood tunnels which are of solid wall construction shall be properly tiled or otherwise smooth surfaced with impervious material, suitably drained, and of sufficient width and construction as to facilitate thorough cleaning. Metal tunnels shall be fitted with side and head shields easily removable for cleaning and the base trough shall have a suitable fall to a blood container, which can be easily emptied and cleaned.

5.2.4 Processing equipment

5.2.4.1 Scalding shall preferably be carried out by more hygienic methods than by the use of scalding tanks. When scalding tanks continue to be used, particular care shall be taken to ensure that hygienic standards are as good as possible. The rate of flow of water into these tanks shall provide for a continuous replacement of the water so as to protect against a build-up of contamination and preferably, where practicable, in such a way that the water flow shall be in the opposite direction to that in which poultry is traveling, so that the scalded poultry is pulled out on that side of the scalding tank on which clean hot water enters the tank. Tanks shall be emptied at regular intervals and at least once every working day. Scald agents where used, shall be approved by the official agency having jurisdiction.

5.2.4.2 Plucking machines shall be designed to control the scatter of feathers as much as possible. The removal of feathers from the site shall preferably take place continuously or as often as necessary, throughout the working day. Feathers shall be stored in suitable clean containers, which shall be removed at least once daily. Feathers conveyed by continuous running water shall be removed from the water, which shall preferably be run to waste.

5.3.1.3 The premises shall be cleared of all live poultry at least once weekly to facilitate complete and thorough cleansing. Birds shall normally be slaughtered within 24 hours of arrival and any water fed to them shall be of portable quality.

5.3.1.4 To avoid the risk of cross-contamination, blood and feathers shall be kept away from the plucked poultry as they go on for the next stage of processing.

5.3.1.5 Each process shall be carried out in its own clearly defined area.

5.3.1.6 Poultry which is received rough plucked for the next stage of processing, shall be hung singly or arranged in single layers on racks or similar type of equipment.

5.3.1.7 Feed in the crop and fecal material in the cloaca shall be removed by such means as will protect against contamination; for example, by suction.

5.3.1.8 Wax dipped poultry shall be handled so that the set wax and removed feathers will fall into a suitable container. Only clean wax which has been stored in a clean place shall be used for wax dipping. Feather separation sieves included in wax dipping machines shall be removable and cleaned once daily. At the close of the working day reclaimed wax shall be heated (a temperature 75⁰C to 80⁰C for a period of not less than 20 minutes, has been found to be effective), skimmed, washed, and filtered or passed through a centrifugal cleaning machine and afterwards stored in a clean place.

5.3.2 Vermin control. Effective measures shall be taken to protect against the entrance into the premises and the harborage 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 Hygiene and health of personnel

5.3.4.1 Managers of establishments shall arrange for adequate and continuing training of every employee in hygienic handling of poultry and clean habits so that the employees are able to take the necessary precautions to prevent contamination of poultry. Instructions shall include relevant parts of this Code.

5.3.4.2 It is recommended that national legislation shall provide for a medical examination of poultry handlers, and inspectors and other persons who come into contact with poultry in establishments. This medical examination shall be carried out just prior to employment and shall be repeated every six months and when clinically or epidemiological indicated. The medical examination shall pay particular attention to 1) infected wounds and sores; 2) enteric infections including parasitic diseases and carrier states, especially with respect to Salmonellae; and 3) respiratory diseases.

5.3.4.3 The managements shall take care to ensure that no employee, while known or suspected to be suffering from or to be a carrier of a disease capable of being transmitted through poultry, or while afflicted with infected wounds or sores or diarrhea, is permitted to work in any area of an establishment in a capacity in which there is a possibility of such a person directly or indirectly contaminating poultry with pathogenic microorganisms. Any persons so affected shall immediately report to management that they are ill.

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. Personnel working with live birds, feeding stuffs or unfit materials shall not be permitted in other sections of the premises where poultry is being processed unless adequate cleansing measures are taken by such personnel to prevent contamination. Clothing including suitable headdress 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, chewing and the use of tobacco shall be prohibited in food handling areas.

5.3.6.4 Wearing of jewelry shall be forbidden

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

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.

5.3.6.7 All staff shall receive training in personal hygiene practice

5.3.6.8 Staff shall wear disposable gloves when removing any carcasses

5.3.6.9 All rubbish shall be placed in bins and bins shall be emptied daily

5.3.6.10 Food or drinks shall not be stored or consumed in any part of the processing area

5.3.6.11 A spillages shall be cleaned up immediately

5.4 Operating practices and production requirements

5.3.1 Inspection and sorting

5.4.1.1 To protect against the risk of cross contamination, domesticated birds including chickens, turkeys, ducks, geese, guinea-fowl, or pigeons shall be processed completely separate from one another either in time or place. Where the separation is one of time the processing areas shall be cleaned thoroughly before the introduction of a different species of bird to the processing area. Workers employed with live birds, feeding-stuffs or unfit materials shall not be permitted to work in parts of the premises where poultry is slaughtered or processed, unless adequate cleansing measures are taken by such personnel to prevent contamination.

5.4.1.2 In order to maintain good hygienic conditions and to prevent hazards to the consumer, all poultry shall undergo ante-mortem and post-mortem inspections, which shall be carried out by the appropriate official agency, under veterinary supervision.

5.4.1.3 Independent of ante-mortem and post-mortem inspection procedures, it is recommended that unfit poultry or poultry suspected of disease be removed and segregated in order that they may be inspected by the official agency having jurisdiction and thereafter disposed of in an appropriate manner in order to prevent the spread of disease.

5.4.1.4 Poultry carcasses, poultry parts and other normally edible materials found to be unfit for human consumption shall be kept in a separate room and removed at least once a day. The room shall be lockable and the carcasses, parts or other materials shall be held there securely. Arrangements for such retention and for disposal generally shall be approved by the official agency having jurisdiction.

5.4.2 Washing or Other Preparation. After evisceration and inspection carcasses shall be washed

5.4.3 Preparation and Processing

5.4.3.1 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.

5.4.3.2 Temperatures, cooling and freezing procedures. Temperatures and procedures which are necessary for cooling and freezing carcasses and all edible portions thereof, shall be in accordance with operating practices which ensure the prompt removal of the animal heat and preserve the condition and wholesomeness of the carcass and all edible portions thereof.

5.4.3.2.1 General cooling requirements. After preparation there shall be no delay in cooling the carcass to an internal body temperature of 4°C or less. Where portioning up takes place after cooling to 4°C, it shall be carried out within one hour of slaughter: immediately after portioning the temperature of the parts shall be reduced to 4°C or less. Where cutting up takes place after cooling to 4°C, the internal temperature of the carcass and parts shall not be allowed to exceed 10°C, in as far as this temperature is approved by the controlling authority which shall nevertheless ensure that necessary measures are taken to control microbiological growth.

5.4.3.2.2 Cooling giblets. Giblets shall be chilled to 4°C or lower within 2 hours from the time they are removed from the bird.

5.4.3.2.3 Refrigeration. The temperature in the storage area where non-frozen poultry carcasses, poultry parts and other edible materials are kept shall be 4°C or less. Poultry carcasses, poultry parts, and other edible material shall be so stored that they are protected against deterioration and mould growth. They shall be regularly inspected and dispatched in strict rotation. Cold rooms used for bulk storage shall preferably be fitted with automatic defrosting equipment. Care shall be taken to avoid the transference of dirt into the rooms. Non-frozen poultry carcasses, poultry parts and other edible material shall be transported at 4°C or less.

5.4.3.2.4 Preservation by freezing. Carcasses, poultry parts, and other edible material which are intended for preservation by freezing, shall be frozen as soon as possible and shall not be held chilled for more than 72 hours.

5.4.3.2.5 Ice-pack containers. When poultry carcasses are ice-packed in barrels or other containers, they shall preferably be wrapped in plastic or other suitable material to protect against contamination. The barrels and

containers shall be covered and shall have an adequate number of drain holes to permit the water to drain out. Wooden barrels or containers shall not be used for this purpose.

5.4.4 Packaging of finished product

5.4.4.1 Materials. Packaging material 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.

5.4.4.2 Techniques. Packaging shall be done under conditions that preclude the introduction of contamination into the product including separate wrapping of giblets.

5.4.5 Preservation of finished product. Methods of preservation and necessary controls shall be such as to protect against contamination, infestation, or development of a public health hazard and against deterioration within limits of good commercial practice.

5.3.6 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.

5.5 Hygiene control program

It is desirable that each plant in its own interest designate a single individual, whose duties are preferably divorced from production, to be held responsible for the cleanliness of the plant. The 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.

5.6 Laboratory control procedures

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

6 End product specification

Appropriate methods shall be used for sampling, analysis and determination to meet the following specification:

6.1 To the extent possible in good manufacturing practice, the product shall be free from objectionable matter. Poultry carcasses, poultry parts and other edible materials shall not contain residues of hydrogen peroxide, natural or artificial coloring matter, substances used to remove colour, antibiotics, preservatives, tenderizers, or flavouring substances.

6.2 Heavy metals

Processed poultry meat shall comply with heavy metals Limits specified in the following table

Table 1 heavy metals limit

Ser. No.	Heavy metals	Requirements	Test method
1.	Lead as (Pb) mg/kg, max	0.5	ES 989
2.	Tin as (Sn) mg/kg, max	150	ES1117

6.3 Pesticide residues

Processed poultry meat shall comply with maximum limits of pesticide residue specified below and test methods are under preparation

Table 2 pesticide residue limits

Ser. No.	Pesticide	Maximum residual limits mg/Kg
1.	Aceprate	0.10
2.	Bendiocarb	0.05
3.	Carbaryl	0.05
4.	Chlorpyrifos	0.10
5.	Chlordane	0.50
6.	Carbendazim	0.01
7.	Chlorpyrifos - methyl	0.05
8.	Cypermethrin	0.05
9.	Clofentezine	0.05
10.	Dichlorvos	0.05
11.	Diflubenzuron	0.05
12.	Deltamethrin	0.01
13.	Dimethipin	0.02
14.	Endrin	1.0
15.	Ethion	0.20
16.	Edifenphos	0.02
17.	Etrimfos	0.10
18.	Glyphosate	0.10
19.	Heptachlor	0.20
20.	Isofenphos	0.02
21.	Lindane	0.70
22.	Methidathion	0.02
23.	Monocrotophos	0.02
24.	Methiocarb	0.05
25.	Permethrin	0.10
26.	Triodime fon	0.10
27.	Vinclozolin	0.05

6.4 Processed poultry meat shall comply with the microbiological requirements specified below

Table 3 microbiological requirements

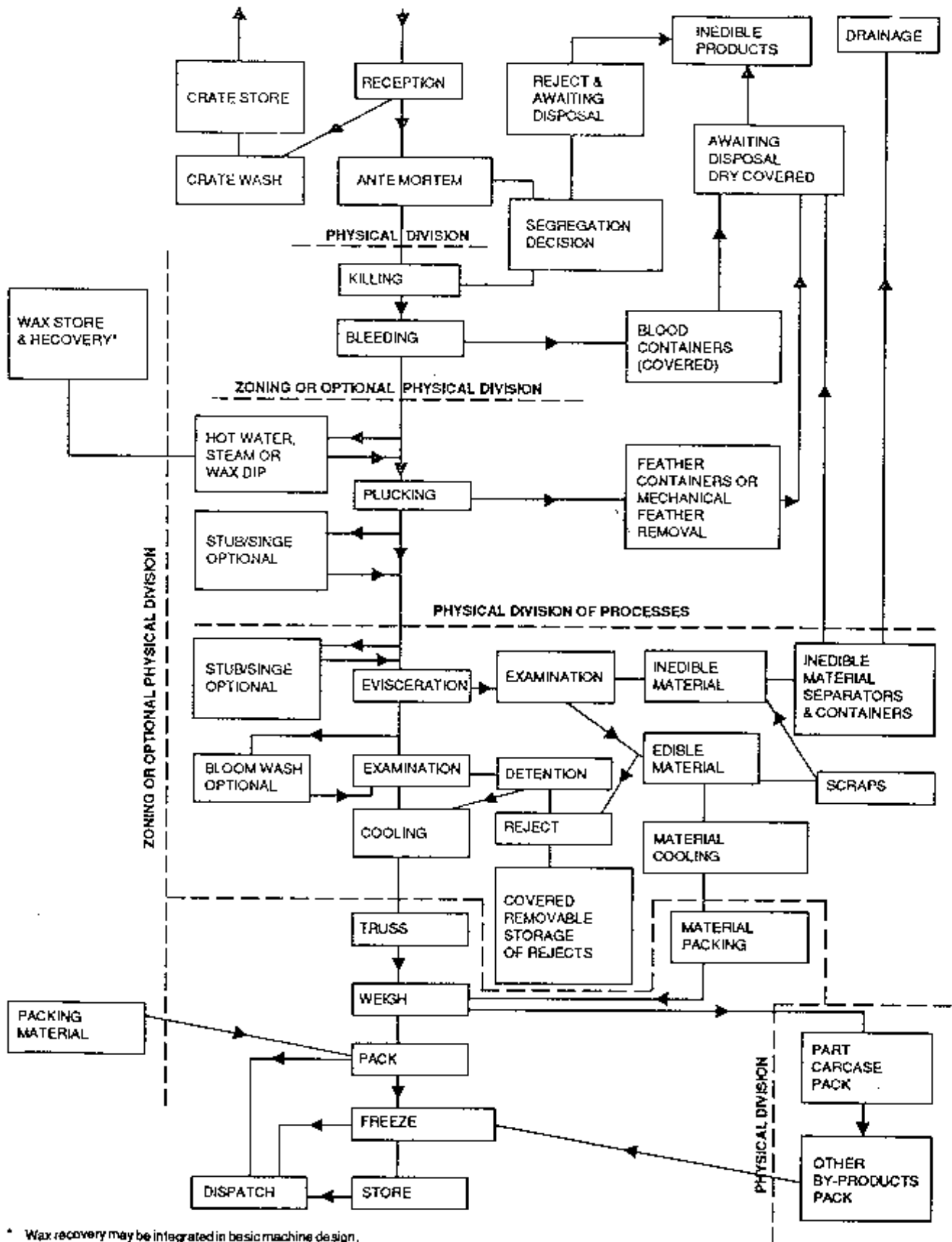
Ser. No.	Characteristics	Requirements	Test method
1.	Total plate count/g	2x10 ⁻⁵	ES ISO 4833
2.	Coliforms/g	Nil	ES ISO 5552
3.	E.Coli/g	Nil	ES ISO 7251
4.	Pseudomonas/g	Nil	ES 13720

The following pathogenic microorganisms shall be determined qualitatively			
Ser. No.	Characteristics	Requirements	Test method
1.	Salmonella	Negative	ES ISO 6579
2.	Campylobacter	Negative	ES ISO 10272
3.	Yersinia	Negative	ES ISO 10273

6.6 Sampling

Sampling of processed poultry meat shall be carried out in accordance with ES ISO 17604:

POULTRY PROCESSING - WORK FLOW



* Wax recovery may be integrated in basic machine design.
 - - - - - Zoning or optional physical division