



DEAS 832: 2021

ICS 67.020

DRAFT EAST AFRICAN STANDARD

Fish industry — Operational cleanliness and hygiene — Guidelines

EAST AFRICAN COMMUNITY

Copyright notice

This EAC document is copyright-protected by EAC. While the reproduction of this document by participants in the EAC standards development process is permitted without prior permission from EAC, neither this document nor any extract from it may be reproduced, stored or transmitted in any form for any other purpose without prior written permission from EAC.

Requests for permission to reproduce this document for the purpose of selling it should be addressed as shown below or to EAC's member body in the country of the requester:

© East African Community 2021 — All rights reserved
East African Community
P.O.Box 1096
Arusha
Tanzania
Tel: 255 27 2504253/8
Fax: 255 27 2504481/2504255
E-mail: eac@eachq.org
Web: www.eac-quality.net

Reproduction for sales purposes may be subject to royalty payments or a licensing agreement.
Violators may be persecuted

Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in the East African Community. It is envisaged that through harmonized standardization, trade barriers that are encountered when goods and services are exchanged within the Community will be removed.

In order to achieve this objective, the Community established an East African Standards Committee mandated to develop and issue East African Standards.

The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the private sectors and consumer organizations. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the procedures of the Community.

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

FDEAS 832 was prepared by the Technical Committee EASC/TC 003, Fish and fishery products.

Fish industry — Operational cleanliness and hygiene — Guidelines

1 Scope

This Draft East African Standard covers guidelines for operational cleanliness and hygiene in the fish industry.

2 Normative references

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.

CAC/RCP 52 -2003, *Code of practice for fish and fishery products*

EAS 39, *Hygiene in the food and drink manufacturing industry — Code of practice*

3 Terms and definitions

For the purposes of this standard, the following terms and definitions shall apply.

3.1

fish harbor

designated place on the shore of a waterbody (sea, lake, rivers, dams) where fish is landed and offloaded

3.2

block

permanent structure/building that contains number of units/ compartment used for storage and selling of fresh or frozen fish

3.3

sea water

water from fresh and marine water bodies

3.4

fish

marine and fresh water fish and all other aquatic foods like shell fish and other marine invertebrates of edible nature

3.5

detergent

chemical substance or chemical mixture used in conjunction with water to assist cleaning

3.6

soil

fish and food residues including dirt, dust, grease, oil, sand and debris which have to be removed from food contact and non-food contact surfaces of the containers, equipment, tools, plants and premises during cleaning

3.7

fish market

all authorized place where fish is handled and sold for human consumption

3.8

disinfectant

chemical or physical agent which reduces the number of micro-organisms in the environment, to a level that does not compromise food safety or suitability

3.9

clean water

water from any source where harmful microbiological contamination, substances and/or toxic plankton are not present in such quantities as may affect the health, quality of fish, shellfish and their products

4 Types of soil in fish industry

The soil to be removed from equipment and other surfaces may be one or a combination of the following:

- a) wet fish, slime, blood, gut, gut-contents, scales, stain, head portions and oil;
- b) air dried fish residues;
- c) dust, sand, debris; and
- d) cooked and hardened fish residues.

5 Cleaning

5.1 Outline of the cleaning process

5.1.1 General

Pre-cleaning and wet cleaning processes in the fish industry comprise:

- a) wetting of the soiled surface;
- b) removal of soil from the surface in a dissolved or dispersed form. Mechanical action assists this process, and hot detergent solution is often advantageous; and
- c) removal of the last traces of the detergent and soil by adequate rinsing with clean water.

NOTE Soil which has been allowed to dry out or has become baked, is particularly resistant to removal. If articles have to be left even for an hour before thorough cleaning it is worth leaving them to soak in water or detergent solution.

5.1.2 Principle

Fish residues in wet condition should be removed by hosing with cold water. If hardened, they are very difficult to clean and the use of scrapers and scrubbers may become unavoidable. Frequent cleaning and hosing should be restored in order to avoid more prolonged and drastic methods. Wooden and other porous surfaces may readily become sodden with fish slime and may create serious problems of cleaning at later stages.

The surface to be cleaned should first of all be scrubbed with a brush in order to remove solid organic matter, then flushed with potable water and subsequently scrubbed with a detergent. The excess of detergent may, then, be washed off and the disinfectant at the required concentration.

NOTE In the case of movable utensils like basins, trays, tubes, baskets, knives, scissors, etc, it will be preferable to dip them in detergent and disinfectant solutions rather than mere cleaning with the respective solutions.

5.2 Cleaning aids

5.2.1 Detergents

5.2.1.1 Classification of detergents

Detergents in general are of three types, namely, acidic, alkaline and neutral. Synthetic detergents, increasingly used by the industry because of their neutral character and non-detrimental value towards metals should be preferred. For specific purposes such as removal of slime from the surfaces of utensils and equipment with which fish comes in direct contact, alkaline detergents may be used.

5.2.1.2 Handling and use of detergents

5.2.1.2.1 Storage

Detergents should be stored in covered and labelled containers under lock and key in a dry and cool place.

5.2.1.2.2 Measurement

Detergents should be carefully measured or weighed while preparing their solutions according to manufacturer's instructions. Inappropriate measuring or weighing may lead to waste, ineffective cleaning or damage to the plant.

5.2.1.2.3 Instructions for use

Detailed instructions for the use of detergents and the frequency of cleaning including any necessary precautions to be observed should be given to the operators.

5.2.2 Disinfectants

5.2.2.1 General

Use of disinfectants is necessary as the detergents alone may not be capable of bringing down the bacterial load on the surfaces of utensils and equipment to any appreciable extent. Chlorine disinfectants are widely used for this purpose. Chlorine is available in two forms, that is, calcium hypochlorite (solid) (bleaching powder) and sodium hypochlorite (liquid).

5.2.2.2 Precautions for storage

Chlorine present in both forms (solid and liquid) is unstable and is easily lost in the presence of light and high temperature. It should be kept in airtight amber-coloured bottles or containers and stored in a dry and cool place.

NOTE Hypochlorite compounds should not be mixed with acidic compounds since dangerous fumes are produced when this is done. Prolonged contact of these substances with the skin should be avoided.

5.2.2.3 Instructions for use

Detailed instructions for the use of disinfectant and the frequency of cleaning including necessary precautions to be observed should be given to the operators.

5.2.3 Utensils

Desired efficiency of any cleaning operation can be achieved only if the utensils have a clean and smooth surface without any crevices. As cane/bamboo baskets and wood have a tendency to absorb slime and thereby cultivating a large number of microorganisms, they should not be used in fish processing industry. In unavoidable cases like fish hold, boat deck, the wood may be used.

The metal selected for the fabrication utensils should have resistance to the action of detergents and disinfectants used in the cleaning operation. Stainless steel utensils are recommended for the purpose.

5.2.4 Mechanical cleaning tools

5.2.4.1 Vacuum cleaners

The vacuum cleaners are of great use in fish meal plants to prevent accumulation of solid meal particles which attract insect infestation or harbouring of micro-organisms. They are also useful in cleaning roof girders and trusses.

5.2.4.2 Scrubbers

Scrubber may be used for cleaning floors. They consist of a rotating brush or brushes kept in contact with the floor by the weight of the machine or manually. The detergent solution may be delivered at the point where the brushes are operating.

5.2.4.3 Pressure cleaners

Pressure cleaners are of great use in cleaning equipment, such as filleting, grading or skinning machine so that the spray may be directed to the inaccessible parts of the equipment. They are also useful in washing ice boxes, wagons, and vans used for transporting fish.

5.2.4.4 Automatic chlorinators

Automatic chlorinators may be fitted to the process water system to ensure uninterrupted chlorination of the water supply.

5.2.5 Surfaces to be cleaned

5.2.5.1 General

In fishing and fish-processing industries, different types of surfaces are required to be cleaned, namely, wooden decks and fish holds in small wooden trawlers; steel floors in steel trawlers; and cemented and tiled floors in processing units. A few of the wide range of articles that require regular cleaning are utensils made of aluminium, galvanized-iron sheets, stainless steel, polythene or any other suitable material; tables made of wood and lined with aluminium or stainless steel; wooden boxes; cane baskets. The surface should be smooth and easy to clean and disinfect.

5.2.5.2 Fishing boats

The boat deck, fish hold and the utensils used in the vessel should be scrubbed with a neutral detergent, such as sodium salt of higher sulphonated fatty alcohols (0.5 %). After washing off the excess detergent, disinfectant like sodium hypochlorite should be applied as per instructions for use. For fishing vessels at sea, normally sea water is used for washing the deck and fish-room after treatment with detergents and disinfectants. There is no particular objection to using sea water provided that the water is drawn from the open sea, since near shore water is often polluted with sewage like, industrial wastes.

5.2.5.3 Fish harbour

Polluted water should not be used for washing purposes; only clean water should be used. Cleaning procedures and the concentrations of the detergent and disinfectants should be similar to those described under 5.2.3.2. Drains and gutters may be washed off first, followed by sprinkling of bleaching powder.

5.2.5.4 Vehicles for transport

These vehicles often develop fish smell which is difficult to remove by mere hosing with water. The internal surface has to be effectively cleaned with water mixed with detergent after removal of the solid particles.

5.2.5.5 Primary process centres, fish meal plants, freezing and canning factories

Washing of the utensils and equipment is similar to those described under 5.2.3.2. The floor may be washed with a higher concentration of chlorine after treatment with the detergent.

6 Fish market

6.1 Location

6.1.1 Fish markets should preferably be located at places away from vegetable, meat or other food markets. A prerequisite should be that main services, such as potable water, electricity and proper hygienic sewage disposal facilities are available.

6.1.2 It is recommended that fish markets should deal solely with the sale of fish and not with any other food or food products. The mixed shops purveying meats, marine foods and vegetables shall be discouraged.

6.2 Blocks

6.2.1 A block shall consist of a number of fish stalls and shall be enclosed in a fence which barricades entry of dogs, cats and other undesirable elements into the block.

6.2.2 Each block shall be provided with a potable water storage supply tank with taps to facilitate drawing of water by fish stalls.

6.2.3 Other facilities like those of toilet and arrangements for washing of hands shall also be provided in a block.

6.2.4 Maintenance of hygienic conditions like repairs of facilities shall be the collective responsibility of the stall holders.

6.2.5 Each block should preferably be provided with a chill/cold facility maintained at 0 °C – 4 °C/ -18 °C or lower.

6.3 Layout

Layout and arrangement of equipment should be adequate enough to allow work be carried under hygienic conditions to preclude contamination of the product and separate the clean and dirty areas of the building.

6.4 Other requirements

- 6.4.1** The market shall be provided with centralized services of water, fish storage and icing.
- 6.4.2** A fish store and an ice store shall be provided at the market.
- 6.4.3** A weighing machine shall be provided.
- 6.4.4** A wash tub for washing fish for storage should be provided adjacent to the ice store/chill stall.
- 6.4.5** Suitable containers for handling of fish shall be provided in the stall.
- 6.4.6** Adequate toilet facilities should be provided with recommended ratio of toilet facility per person to be 1:25 for each of the stalls.
- 6.4.7** The doors provided for the stores should be insulated. The doors provided for the entrances to the market as well as to the stands should also be glazed.
- 6.4.8** The windows provided in the market should be glazed and with a fly-proof net.
- 6.4.9** The ceiling of the market should be of cement plain sheets with wooden reapers.
- 6.4.10** The flooring shall be mosaic over cement concrete.
- 6.4.11** Suitable provision of exhaust fans shall be made in the stalls.

7 Fresh fish stalls

7.1 Location

Fresh fish retail stalls should ensure liberal supply of water, sewage disposal facilities and power supply. They should be preferably located at places separated from vegetables or other foods. It should also be away from meat and poultry since fish are more perishable and pick up infection.

7.2 Sections

7.2.1 Fish receiving and storage room

Fish received in boxes should be emptied immediately and chilled to a temperature of 0 °C – 4 °C. The boxes should be cleaned immediately for re-use, if necessary. Surplus fish as well as fish left over after sales should be stored in refrigerator or ice chests. This room may also serve for storage of ice.

7.2.2 Fish dressing room

7.2.2.1 Fish exhibited for sale shall be washed thoroughly in water and freed from viscera and gills, if received whole, on cutting board. Washing vats should be coated by linseed oil paint. After washing, the dressed fish may be sold as such or cut into steaks or fillets as required.

7.2.2.2 Cutting knives of stainless steel blades with sanitary holders shall be employed for dressing of fish. Cutlery and equipment should be sterilized using methods such as hot air oven, hot water (75°C - 80 °C, 15

min); and/or in water containing 50 mg/kg of chlorine for 2 min. All equipment should be washed within 2 h of use apart from daily washing while commencing and closing of sales.

7.2.3 Fish sales counter

7.2.3.1 Fish shall be sold in closed glass cabinets and flies should be prevented by pesticides strips or other effective means unless the stall is completely screened from flies by wire gauze windows of 2-mm size.

7.2.3.2 Fish may be exhibited on benches of rust-proof material or wood lacquered white at least 50 cm above the floor level.

7.2.3.3 Fish shall not be piled in heaps and bruising of fish should be avoided at all stages.

7.2.3.4 Fish sold as fillets shall be covered in water-proof paper.

7.2.3.5 Fish shall be chilled from the time of receipt till sale to a temperature of 0 °C – 4 °C with the help of ice and iced water.

7.2.4 Covered passage for customers

Covered passage before sales counter should be protected from rain and sun.

7.3 Constructional requirements

7.3.1 In case walls do not have tiles, they should receive water impermeable, non-flaking coating, white vermin-proof oil paint finish. Non-washable ordinary distempers shall not be used. All joints with walls and other surfaces should be smooth and rounded for easy washing. Roof should be made of appropriate material.

7.3.2 The floor should be water impermeable and capable of easy washing, built of cement, granite, asphalt or smooth hard rubber concrete and free from cracks, joints and open drains. A slope towards the drain is recommended to ensure appropriate flow of water into the drainage. Actual contact of fish with flooring should be avoided and fish should always be placed on glass/metal/clean wooden surface.

7.3.3 Illumination of fish retail shops should be sufficient. Fish should not be exposed to the sun.

7.4 Employee hygiene

Employees in fish retail stalls shall observe hygienic conditions as given in EAS 39 and CAC/RCP 52.

BIBLIOGRAPHY

IS 14520: 1998 (R2003), *Fish industry — Operational cleanliness and layout of market — Guidelines*

