

**STANDARDIZATION ORGANIZATION FOR G.C.C (GSO)**



**GSO 1026 / 2000**

**CODE OF HYGIENIC PRACTICE FOR  
PREPARATION, TRANSPORTATION,  
HANDLING AND STORING OF FISH**

**ICS: 67.120.30**

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## **CODE OF HYGIENIC PRACTICE FOR PREPARATION, TRANSPORTATION, HANDLING AND STORING OF FISH**

### **1. SCOPE AND FIELD OF APPLICATION**

This standard is concerned with the code of hygienic preparation, transportation, handling and storage of fish.

### **2. COMPLEMENTARY REFERENCES**

- 2.1 GSO 9/1995 “Labelling of Prepackaged Foodstuffs”.
- 2.2 GSO 21/ 1984 “Hygienic Regulations for Food Plants and Their Personnel”.
- 2.3 GSO 149/ 1993 “Bottled and Unbottled Drinking Water”.
- 2.4 GSO 150/ 1993 “Expiration Periods for Food Products Part One”.
- 2.5 GSO 323/ 1994 “General Requirements for Transportation, Storage of Chilled and Frozen Foods”.
- 2.6 GSO 380/ 1994 “Chilled Fish”.
- 2.7 GSO 384 / 1994 “Edible Ice”.
- 2.8 GSO 514/1994 “General Technical and Hygienic Standardized Specifications for Handling Fresh Fish at Sea”.
- 2.9 GSO 589/ 1995 “Methods of Physical and Chemical Analysis of Fish, Shell Fish and Their Products”.
- 2.10 GSO 655/1996 “Methods of Microbiological Examination for Meat, Fish and Shell Fish Products”.
- 2.11 GSO 1016/1998 “Microbiological criteria for Foodstuffs – Part 2”.
- 2.12 GSO Standard ON “Frozen Fish”
- 2.13 GSO Standard ON General Requirements for Foodstuffs Containers”.
- 2.14 GSO Standard ON Chilling and Freezing Stores for Foodstuffs.

### **3. DEFINITIONS**

- 3.1 Glaze: A thin layer of ice formed on the surface of the frozen product by spraying or dipping it into potable water or potable water containing an approved additive.
- 3.2 Dressing: The removal of scales, fins and internal viscera plus cleaning and / or cutting.
- 3.3 Contamination: The direct or indirect transmission of an objectionable material to the foodstuff.

- 3.4 Chilled fish: Freshly caught fish which have not been subjected to any preserving treatment except chilling.
- 3.5 Frozen fish: Fresh sound fish which have been cleaned and washed, from which the viscera and the fins may have been removed and /or may be cut after cleaning. It shall be exposed to an immediate freezing process at a temperature enough to lower the thermal centre temperature to - 18 °C.
- 3.6 Fish handling: Any process concerned with production, dressing, packing, storage, transportation, distribution and selling of fish and its products.
- 3.7 Fish hygiene: The range of fish safety and its freedom from hazardous materials that may effect human health.
- 3.8 Sanitation: Reducing the ratio of viable micro-organisms by chemical or physical means to a level which does not cause harmful contamination to fish or man.

#### **4. REQUIREMENTS**

On planning and construction of plants, fish receiving centres and general and retail outlets, the following shall be considered; without prejudice to what is stated in the GSO standard mentioned in 2.2.

- 4.1 Sea water: In case of using sea water for cleaning and immersion of caught fish, the water shall be hygienic and clean.
- 4.2 Ice: Without prejudice to what is stated in the GSO Standard mentioned in 2.7 the following shall be observed:
- 4.2.1 Ice shall be available at all areas of production and on ships, and in large quantities. It shall be evenly distributed on all fishes in a hygienic method..
- 4.2.2 The level of ice at the top shall be similar to its level at the bottom and the process of draining of excess water shall be close to the floor and away from the unused ice.
- 4.3 **Equipment and their maintenance**
- 4.3.1 Equipment and utensils used in fish processing shall be manufactured from corrosion resistant materials, impervious and easy to clean and sterilize.
- 4.3.2 Cutting boards shall be regularly resurfaced to facilitate cleaning of pores.
- 4.3.3 Wooden materials are not acceptable in areas where fish is packaged or stored.
- 4.3.4 The work place shall be equipped with utilities for hand washing, and for cleaning, and sanitation of equipment. Taps shall be of the knee or foot operated type. Hand washing facilities shall have running warm water premixed to a suitable temperature with an approved soap plus single use hand towels.
- 4.3.5 Facilities for equipment sanitation shall be supplied with water of a temperature not less than 82 °C or with 50 ppm chlorine solution.
- 4.3.6 All systems used in transportation, cutting and manufacturing shall be examined before operation to ensure their fitness for work.
- 4.3.7 All equipment shall be well maintained at all times.

- 4.3.8 All sets used for cutting, cleaning and preparation shall be made from a suitable material which causes no contamination to fish and can be easily cleaned.
- 4.4 **Retail sale of fish**
- 4.4.1 Area of fish preparation for customers shall be separated from the site of fish offered for sale.
- 4.4.2 Fish exposed for sale in refrigerated cabinets shall be separated from hand touching of customers. Crushed ice used to cover and keep them cool. Fish for customer selfservice sale shall be only frozen wrapped fish products.
- 4.4.3 Refrigerators of product show shall be chilled and able to fix fish temperature at the ideal degrees which create good conditions through the period of exposition.
- 4.4.4 Electric traps for insects shall be put at all sites of fish sale and cleaning.

## **5. REQUIREMENTS FOR PRODUCTION PROCESS:**

### **5.1 Fish unloading**

- 5.1.1 Caught fish shall be unloaded very quickly and without harming fish species.
- 5.1.2 When chilling is completed during transport, ice shall not be allowed to melt during unloading.
- 5.1.3 Fish receiving centres, at the port of delivery shall be equipped with handling and treatment equipment to protect them from the effect of sun and rain.
- 5.1.4 The method of unloading by throwing fish one after another towards the port is prohibited.

### **5.2 Fish inspection**

- 5.2.1 Fish shall be graded and its species determined inside the package on arrival and the best method for their processing shall be decided..
- 5.2.2 Preliminary inspection shall be done by taking samples for lab. tests.
- 5.2.3 Lab. tests shall comply with the GSO standards mentioned in (2.6, 2.7, 2.9, 2.11, 2.12, 2.13, 2.14).

### **5.3 Fish handling**

- 5.3.1 Fish shall be handled under the hygienic measures as mentioned in item 4.
- 5.3.2 Fish shall be preserved under ice or be hygienically chilled until processing and production.

## **6. PACKAGING**

Without prejudice to what is stated in the GSO standard mentioned in 2.13, the following precautions shall be taken on packaging frozen fish:

- 6.1. Packages used shall be light in weight and easy to carry.
- 6.2 The material of the package shall not be hydrophobic.
- 6.3 The package shall be impermeable to prevent freezer burns and other changes in texture, shall be impervious to oils and fats.

- 6.4 The package shall be resistant to low temperatures, breaking and tearing.
- 6.5 It shall prevent passage of gases so as to avoid fish exposure to oxidation.
- 6.6 It shall protect fish from exposure to light.
- 6.7 It shall permit quick freezing and thawing.
- 6.8 It shall be easy to fill, resistant to pressures and pitting.
- 6.9 It shall be non toxic.
- 6.10 The packing containers shall be made of polyethylene or any other moisture proof material, and shall be clean, sound, do not cause contamination of the product by any undesirable material and conform to the size of packaged fish.
- 6.11 Boxes shall be uniform in size and weight.
- 6.12 The containers in which the product is packed shall be placed in moisture proof wooden boxes or cartons to provide full protection from contamination and mechanical harm during transportation, handling and storage.
- 6.13 The packaging material shall not be reused.
- 6.14 The final processed products or those distributed during processing or packing shall be numbered to determine the batch and its date of production.

## **7. LABELING**

Without prejudice to what is stated in the GSO standard mentioned in 2.1.

The adhesive label on the package shall be easily read and shall have all the required information and comply with the GSO standard mentioned in 2.5.

## **8. TRANSPORTATION**

Without prejudice to what is stated in the GSO standard mentioned in 2.5.

### **8.1 Transportation by ships**

Without prejudice to what is stated in the GSO standard mentioned in 2.8.

- 8.1.1 The ship store shall be disinfected before loading and after discharging.
- 8.1.2 Sufficient quantities of crushed ice shall be made available to cover the caught fish until its processing.
- 8.1.3 Fish shall be transported in such a way as to protect them from contamination and deterioration.
- 8.1.4 Fish shall not be shipped in vessels previously used for transport of substance harmful to product characteristics or public health, (e.g. animals, chemical etc.....).

### **8.2 Frozen and chilled transport**

- 8.2.1 Fish transported by containers shall have a temperature not exceeding 4 °C for the chilled products and -18 °C for the frozen ones.

- 8.2.2 For chilling, ice, a mixture of ice and salt or cold sea water (chilling by immersion) shall be used followed by storing at 0 °C. It is preferable to have crushed ice in abundance and in sufficient quantities throughout the shipping period.
- 8.2.3 Chilled fish shall be transported in suitable boxes and shall be arranged evenly in a horizontal position where crushed ice is alternately put in between, with the bottom and upper layers of crushed ice.
- 8.2.4 Boxes used for fish transportation shall be made from hygienic suitable material easily cleaned and does not contaminate fish.

## **9. STORAGE**

### **9.1 System of cold storage**

Rules and hygienic measures demanded when cold stores are used. Without prejudice to what is stated in the GSO standards mentioned in (2.4, 2.6, 2.14), the following shall be observed:

- 9.1.1. Storage of chilled fish shall be in boxes made of plastic or aluminium or any other suitable material.
- 9.1.2. Boxes shall not be arranged packed, in touch with walls or directly placed on the floor of store.
- 9.1.3. The height of fish in boxes shall be so arranged as to prevent its dropping during transport.
- 9.1.4. The store temperature shall be kept constant at (- 0.5 °C to 2 °C).

### **9.2 System of freeze storage**

Without prejudice to what is stated in the GSO standard mentioned in (2.5, 2.12, 2.14) the following shall be observed:

- 9.2.1. Delaying fish freezing process shall be avoided..
- 9.2.2. It shall be ensured that freezing is carried out according to the correct steps, maintaining a high standard of cleanliness during all steps.
- 9.2.3. The fish quantity to be frozen shall be conformable with the capacity of freezing space.
- 9.2.4. It is preferable to freeze fish in open plates.
- 9.2.5. Plates shall be of the easily opened and cleaned type and have good thermal insulation.
- 9.2.6. Plates shall be thoroughly cleaned before use.
- 9.2.7. Plates shall be homogeneously packed on trolleys.
- 9.2.8. The least possible space shall be left between boxes when packing and storing.
- 9.2.9. Row fish shall be pre-examined before freezing.
- 9.2.10. Freezing equipment shall be regularly maintained.
- 9.2.11. The freezing period of every kind of fish and its products shall be stated.

9.2.12. The temperature of the freezer shall not exceed - 35 °C and the temperature of the thermal centre of fish shall not exceed - 18 °C.

### **9.3 Store layout**

The following shall be observed:

9.3.1. The floors of cold stores shall not be slippery.

9.3.2. Distances or passage shall be left to facilitate movement of persons and trolleys.

9.3.3. Usage of air blocks to keep temperature constant.

9.3.4. The floor shall be hard and insulated.

9.3.5. The store shall be inside the building especially in hot areas.

9.3.6. The ambient temperature of shall be recorded.

9.3.7. The quantity of product to be stored and its temperature a time of admittance to the store shall be known.

9.3.8. The number of the total doors of the store and the number of door opened daily shall be known.

9.3.9. Knowledge of the store size.

9.3.10. Kind of the prepared water, and its pressure and salinity.

9.3.11. The available area.

9.3.12. The possibility of electric facility.

## **10 PROGRAM OF HEALTH CONTROL**

10.1 A quality control lab. shall be made available to carry out the necessary tests of the product, to examine the processing machines to ensure that they are free from pathogenic microbes and to carry out. Regular examinations with every new product.

10.2 Persons responsible for quality control and food inspection shall be employed for this purpose, their duties shall be completely separated from production and shall have experience in the field of food hygiene and quality control.

10.3 An employee responsible for cleanliness shall be recruited, with duties separate from production. He shall have well trained assistants in the use of cleaning equipment and materials.

10.4 The management of the plant shall put hygienic control measures to be followed by employees before commencing work. Educational and training courses shall be arranged for employees in food contamination, proper food handling, storage, transportation and food packaging.

10.5 The controlling authority, according to their speciality shall periodically draw sample products for analysis to ensure its safety and conformity to GSO standards.

10.6 Sites, equipment and sensitive materials shall have a special care.



**REFERENCES**

- Sanitation recommendations for fresh and frozen fish plants. National Oceanic and Atmospheric Administration - J. Perry Lane, 1/1974.
- Codex Alimentarius Volume B, CAC/RCP 16-1978 - for frozen fish.
- New Zealand Standard NS 8402/1974 Code of Practice for the Handling Processing and distribution of fish.
- Fish Cured and Processing M.J. Hindi.
- Arab Standard Specifications No. 559/1985 Fish and Fish Products - Frozen Fish.
- Code of Federal Regulations Part 50 - 10/1/1991 Wildlife and Fisheries Federal Standard.
- Sanitation Standards for Fish Plants FED - STD - 369/1977 Meat and Fish Technology by M.A. EL. Taai.