

METROLOGY

SMALL AND MEDIUM ENTERPRISES

World Metrology Day: 20 May 2005

Weight Measurements



- Weight measurements are done because most governments place restrictions on the amount of fish caught
- Mostly conveyor belt-type weighing systems
- In the white fish industry: fish weighed on receiving, graded, filleted, accumulated to a certain weight, packed and frozen.

Temperature Measurements



Temperature is measured:

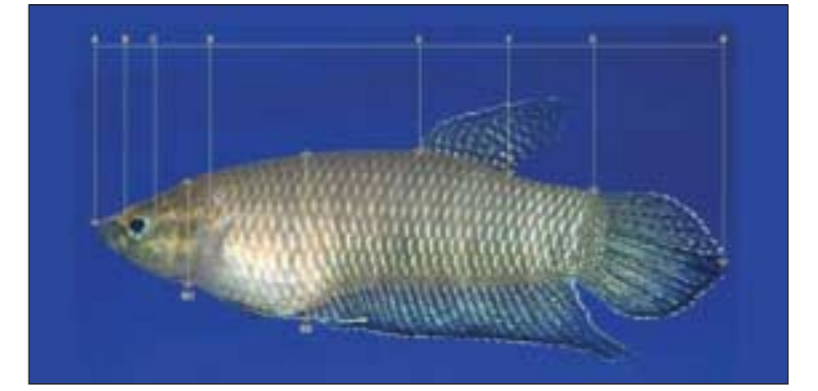
- During transportation
- For the proper maintenance of fish tissue
- To control icing
- In cold stores.

Chemical Measurements



- Chemical contaminants are naturally occurring or added during processing
- Harmful chemicals at high levels are associated with acute cases of food borne illness
- Harmful chemicals can be responsible for chronic illnesses at lower levels
- The Code of Federal Regulations, Title 21, provides guidance on naturally occurring toxic substances and allowable limits for many food additives. The FDA Compliance Policy Guidelines also provide information on other naturally occurring chemicals.

Length Measurements



Length measurements made on fish are:

- Total length
- Standard length
- Body depth
- Head length
- Head depth
- Eye diameter
- Pre-orbital
- Post-orbital
- Pre-dorsal length
- Post-dorsal length.

Packaging



- Fish are weighed, headed, tailed and gutted and placed in cans
- Fish are pre-cooked, where temperature control is involved
- Cans are drained and filled with the desired sauce at the correct temperature
- Manufacturing of the sauce, either by a high speed mixer/cutter or a homogeniser, requires high pressures that are measured
- Cans are closed and placed in a large pressure cooker where temperature and pressure are accurately controlled
- At the end of cooking, cans are cooled and removed from the retort, stacked and stored.

Hazard Analysis and Critical Control Point (HACCP) System

HACCP is a systematic approach to the identification, evaluation and control of food safety hazards. HACCP promotes international trade by increasing confidence in food safety.

HACCP is based on the following seven principles:

1. Conduct a hazard analysis (biological, chemical or physical)
2. Determine the critical control points (CCPs). A CCP is a point, step, or procedure which is applied to prevent or eliminate a food safety hazard, or reduce it to acceptable levels
3. Establish critical limits for preventive measures. There are boundaries of safety for each CCP, e.g. time, temperature, humidity, pH, titratable acidity, preservatives, salt concentration and viscosity
4. Establish procedures to monitor CCPs
5. Establish corrective action to be taken when monitoring shows that a critical limit has been exceeded
6. Establish procedures to verify that the HACCP system is working
7. Establish effective record keeping systems that document the HACCP system.

Storage and Distribution of Fish Products



Fish products directed for storage or to a purchaser are randomly checked by the internal quality control staff. This involves:

- Proper packaging materials and labelling
- Proper conditions of storage, e.g. duration and temperature of storage
- Transportation and hygienic conditions (cleanliness, temperature records, correct loading in vehicles).

Product Standards



Product standards cover specific requirements in terms of:

- Size of fish
- Compliance with importing country requirements:
 - product standards
 - hygiene and operational requirements
 - specific analyses to demonstrate conformity with certain standards
 - prescribed methods for micro-biological, chemical or physical examination of foods by reference to an appropriate standard.

Labelling



Legislation requires that each product is labelled with:

- True description of the goods
- List of ingredients in descending order
- Net contents
- Date of packaging or processing
- Registered establishment number
- Country of origin
- Identification of lot
- Method of preservation
- Name and address of the manufacturer, producer, exporter or consignee.

Processing and Storage Premises



Premises must comply with requirements outlined in legislation. This requires specification of:

- Structural requirements for factory or vessel
- Maintenance and operation in a hygienic manner
- Principles of good manufacturing practice, e.g. temperature control, layout of facility, positive air pressure is essential for product safety.

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