Appendix A5: Regulation & National Standards – Seafood

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Regulation and National Standards Applicable to Seafood

General Regulation and Standards on Seafood

Administrative Measures of Inspection, Quarantine and Supervision on Entry and Exit Aquatic Products

AQSIQ Decree 135

Administrative Measures of Inspection, Quarantine and Supervision on Entry and Exit Aquatic Products has been reviewed and discussed at AQSIQ general meeting on 10 March 2010, and it is now passed for promulgation. The Measures will take effect from 1 June 2011.

Minister

4 January 2011

Chapter 1 General Rule

Article 1 In order to strengthen the inspection and quarantine of entry and exit aquatic products and the supervision and administration thereof, to guarantee the quality safety and sanitation of entry and exit aquatic products, prevent the transfer of animal disease into/out of China, and to protect the safety of aqua farm production and human health, these Regulations are formulated in accordance with the Law of the People's Republic of China on Import and Export Commodity Inspection and the implementation regulations thereof, the Law of the People's Republic of China on Import and Export Animal and Plant Quarantine and the implementation regulations thereof, the Law of the People's Republic of China on Frontier Sanitation Quarantine and the implementation regulations thereof, the Food Safety Law of the People's Republic of China, the Special Regulations of the State Council for Strengthening Supervision and Management of Safety of Food and other Products, and other relevant laws and regulations.

Article 2 These Measures shall apply to the inspection and quarantine of entry and exit aquatic products and the supervision and administration thereof.

Article 3 Aquatic products as used in these Measures shall refer to the aquatic animals and the products thereof for human consumption, including the aquatic animals like scyphozoa, molluse, crustacean, echinodermata, cephalo chordata, fish, amphibian, reptile, aquatic mammal, other aquatic animals, and aquatic plants like alga, etc. and the products thereof（excluding live aquatic animals and the propagation materials thereof, hereinafter the same）.

Article 4 The General Administration of Quality Supervision, Inspection and Quarantine （hereinafter referred to as AQSIQ） shall administer the entry & exit inspection and quarantine, and the supervision and administration thereof of the whole country in a uniform way. The entry & exit inspection and quarantine bodies set up by the AQSIQ at the localities（hereinafter referred to as the inspection and quarantine bodies） shall be in charge of the inspection and quarantine of entry and exit aquatic products and the supervision

and administration thereof within the areas under their respective jurisdictions.

Article 5 In accordance with laws, the inspection and quarantine bodies shall conduct inspection, quarantine, supervision and random inspection of the entry and exit aquatic products, and conduct credit management and category management system on enterprises that manufacture and process entry and exit aquatic products (hereinafter referred to as manufacturing enterprises).

Article 6 Manufacturing enterprises shall conduct manufacture in accordance with laws, administrative regulations and relevant standards, bears responsibilities for society and the public, ensures quality and safety of aquatic products, accepts social supervision, and undertakes social responsibility.

Article 7 AQSIQ adopts registration management for issuers of certifications for entry and exit aquatic products, the personnel who are not registered with AQISQ cannot issue inspection and quarantine certificates.

Chapter 2 Import Inspection and Quarantine

Article 8 Imported aquatic products shall comply with Chinese laws, administrative regulations, national standard requirements of food safety; inspection and quarantine requirements in the agreements, protocols and MoUs signed between China and exporting countries or regions and quarantine requirements in commercial arrangements.

With regard to aquatic products that do not have any national standard for food safety, the consignee shall present the inspection and quarantine bodies with the permit issued by the health administrative departments of the State Council.

Article 9 In accordance with Chinese laws, administrative regulations, national standard requirements of food safety, risk analysis results of domestic and foreign aquatic disease and epidemic situation and pest, AQSIQ shall take into consideration the assessment of efficiency of quality and safety management system of the countries/regions planning to export aquatic products to China, formulate and publish the inspection and quarantine requirements of China for entry aquatic products; or sign inspection and quarantine agreements clarifying inspection and quarantine requirements and relevant certification requirements with countries or regions planning to export aquatic products to China

Article 10 AQSIQ adopts record management for the exporters or agents exporting aquatic products to China, and regularly publishes the list of those foreign exporters and agents that are qualified and registered.

Registration management of foreign manufacturing enterprises is implemented in accordance with relevant regulations of AQSIQ.

Article 11 Inspection and quarantine bodies shall put consignees of imported aquatic products into record management. Only the consignees already subject to record management are permitted to go through import process.

Article 12 Consignees of entry aquatic products shall establish aquatic entry and sale record system. The record shall be true, and be kept for no less than two years.

Article 13 With regard to entry amphibians, reptiles and aquatic mammals and other aquatic products of high risk, AQSIQ will implement quarantine approval system. The consignee of the above mentioned

products must go through inspection approval procedure to get entry animal and plant quarantine permit before signing a commercial contract.

According to necessity and relevant regulations, AQSIQ will send officials to exporting countries or regions to conduct pre-clearance on aquatic products.

Article 14 Prior to or during entry of aquatic products, the consignee or the agent shall obtain original inspection quarantine certificate, certificate for country of origin, trade contract, bill of lading, packing sheet, invoice and other documents etc issued by the exporting country or region and apply to the inspection and quarantine bodies at the entry ports for inspection.

The inspection and quarantine certificate issued by the exporting country or region shall comply with the certification requirements of AQSIQ.

Article 15 Inspection and quarantine bodies shall examine the documents submitted by the consignee or the agent, accept the application for inspection if they can meet requirements, write off quarantine approvals, and issue the clearance certificate for entry goods.

Article 16 The entry aquatic products shall be stored in the cold store designated by the inspection and quarantine bodes. The entry ports shall possess suitable capacity for the quantity of entry aquatic products. The cold store shall comply with the inspection and quarantine requirements of cold store for entry aquatic products.

Article 17 Transport vehicles and containers loading and transporting entry aquatic products shall implement disease prevention and disinfection treatment under the supervision of inspection and quarantine bodies at the entry port. Without permission from inspection and quarantine bodies, entry aquatic products cannot be unloaded from transport vehicles and containers.

Article 18 The inspection and quarantine bodies at the entry port shall conduct on-site inspection and quarantine for entry aquatic products. The items subject to on-site inspection and quarantine includes the following:

(1) Verify the document and examine the goods;

(2) Check the package to see if the entry aquatic products meet the basic packaging requirements.

(3) Conduct phytosanitary quarantine, or when necessary, disinfestation treatment on entry brined or dried aquatic products that are easy to breed phytosanitary pests.

(4) Check whether the goods are rotten, dried, or with foreign matter or iced blood, or with too much ice or frost.

Article 19 The label of entry pre-packaged aquatic products in Chinese shall comply with mandatory requirements of relevant laws, administrative regulations in China, and technical standards of other countries. Inspection and quarantine bodies shall inspect the label of pre-packaged aquatic products in accordance with regulations.

Article 20 In accordance with regulations, the inspection and quarantine bodies shall collect samples of entry aquatic products, and carry out test or monitor the following items on basis of requirements of relevant standards, monitoring plans and warning notifications etc:

(1) pathogenic microbes, residues of heavy metals, agricultural chemicals, veterinary drugs and other poisons or harmful matters;

(2) Epidemic diseases and parasites;

(3) Other required items.

Article 21 For the aquatic product that has passed inspection and quarantine, the inspection and quarantine bodies at entry port shall issue the inspection and quarantine certificate for entry goods, which approves the manufacture, processing, sale and use. The inspection and quarantine certificate for entry goods shall specify the traceable information including container number, manufacture batch number, manufacturer, and shipping mark etc.

With regard to the aquatic product that has not passed inspection and quarantine, the inspection and quarantine bodies shall issue a notification of inspection and quarantine treatment. If it is concerning the items other than human safety, health and environmental protection, it may be subject to technical treatment under the supervision of the inspection and quarantine bodies, and may be sold or used after being cleared through inspection and quarantine again.

For the applicant who applies for the certificate concerning the claim for compensation or other certificates, the inspection and quarantine bodies shall issue relevant certificates.

Article 22 The aquatic shall be returned or destroyed in any one of the following cases:

(1) The product, required to apply for entry quarantine approval, does not have a valid entry animal and plant quarantine permit;

(2) The establishment, required to be registered in China, is not registered;

(3) Does not have a valid inspection and quarantine certificate issued by official bodies of the exporting country or region;

(4) Does not meet requirements of human safety, health and environment protection items.

Chapter 3 Exit Inspection & Quarantine

Article 23 The aquatic products for export shall be supervised and spot checked by the inspection & quarantine agency, and then the Customs could allow the aquatic products to pass as per the Customs Clearance Certificate issued hereby.

Article 24 The inspection & quarantine agency shall carry out the inspection & quarantine on the aquatic products and package thereof in accordance with the requirements as below:

(I) Requirements for inspection and quarantine in the importing country or region;

(II) Requirements for inspection and quarantine as specified by the inspection & quarantine-related agreement, protocol and memorandum signed by and between importing county or region and China;

(III) Requirements for inspection and quarantine as specified by Chinese laws & regulations and AQSIQ;

(IV) Requirements for quality, quantity, weight and packing as officially specified by the importing country or region;

(V) Quarantine requirements as specified in the commercial contract.

Article 25 The inspection & quarantine bodies shall carry out registration on the aqua farm for export. The producers of aquatic products for export shall source the raw materials from the registered aqua farms, harvesting areas or fishing vessel approved by the fisheries administrative department and meet the inspection and quarantine requirements of the importing country or region.

Article 26 The registered aquatic farms shall meet the basic conditions and sanitary requirements as below:

(I) Obtain cultivating permission from the fisheries administrative department;

(II) Certain scale of farming: total area of pond or open maritime space for farming shall be over 50 mu; total area of cement pool for farming shall be over 10 mu. Also, the standardized no. for the rearing pond shall be available;

(III) Sufficient water source; the water for aqua farm farming is subject to the *Water Quality Standard for Aqua farm*;

(IV) Free from livestock & poultry farm, hospital, chemical factory, dump; also, facilities are available to separate the outside environment; the sanitary environment inside the aqua farm is good;

(V) Properly arranged to meet the quarantine as required, so as to avoid the cross contamination arising from water supply or drainage;

(VI) The warehouse for medicines and warehouse for forage are respectively established; also, these warehouses shall be kept clean, dry and ventilated. The registrant shall be available to record the warehousing and delivery;

(VII) Cultivating density is appropriate; also, the equipment for oxygen increase shall fit for the cultivating density;

(VIII) The forage is from the forage processing factory archived by the inspection & quarantine agency as well as subject to the *Measures for Inspection and Quarantine on Forage of Edible Animal* as specified;

(IX) Do not use the drug and other poisonous substances forbidden by China, importing country or region. The adopted drug shall be marked with effective ingredients and records for use as well as strictly follow the drug withdrawal as required;

(X) Perfect management agency and written aqua farm farming control system (including young fish procurement, cultivating, quarantine and use of drug & forage);

(XI) The qualified aqua farm technician and quality supervisor shall be available; also, the qualified aqua farm technician and quality supervisor shall be assumed by different person. The aqua farm technician shall use the medicine according to the formula, while the medicine shall be issued by the quality supervisor. Both the qualified aqua farm technician and quality supervisor shall meet the conditions as follows:

1. Familiar with and follow the inspection & quarantine-related laws, administrative regulations;

2. Familiar with and follow regulations for aquatic disease and veterinary medicine as specified by the administrative department for agriculture;

3. Familiar with regulations and standards for chemical residual control as specified by the importing country or region;

4. Provided with certain cultivating experience or above the degree for cultivating.

(XII) Establishing of timely report system for major epidemic diseases and incidents

Article 27 Registration of aqua farm for exported aquatic products shall follow the procedures as below:

(I) Aqua farm for exporting aquatic products shall apply for registration and submit relevant documents to the local inspection & quarantine agency;

(II) As per the basic conditions and sanitary requirements in article 26 herein, the inspection & quarantine agency shall examine the candidate aqua farm for exporting aquatic products. The inspection and quarantine agencies can approve and grant registration certificate to the qualified aqua farms which meet the above basic conditions and sanitary requirements;

(III) The registration certificate shall come into force since the date when it is issued. The effective period thereof lasts for four years. The renewal thereof shall be proposed by the aqua farm for exporting aquatic products three months ahead of the expiry of the effective period;

(IV) In case of change of address, name, cultivating scale, ownership and legal representative, the registered aqua farms for exported aquatic products shall timely re-apply for registration or handle the procedures for change at the local inspection & quarantine agency.

Article 28 The aqua farm for exporting aquatic products shall provide each batch of raw materials for exported aquatic products with supply certification.

Article 29 The agricultural inputs such as forage and veterinary medicine shall be used by the archived aqua farm for exported aquatic products in accordance with the food safety standards and regulations as specified by the importing country or region or China. Do not purchase or use the agricultural inputs which are not subject to the food safety standards and regulations as specified by the importing country or region or China.

Article 30 The inspection & quarantine agency shall inspect and supervise the archived aqua farm for exported aquatic products as well as conduct relevant records. The inspection & supervision shall include daily inspection and annual examining.

Based on the risk analysis, the inspection & quarantine agency shall carry out the monitoring on aquatic diseases, veterinary medicine residual, pollutant, water quality and other poisonous substances for the archived aqua farm for exported aquatic products, so as to set up the perfect safety risk information control system for exported aquatic products.

Article 31 The manufacturers for exported aquatic products shall be archived by the inspection & quarantine agency according to the regulations for archiving management of food manufacturers.

If requirements for registration is raised by the importing country or region for China's manufacturers for exported aquatic products and the registered enterprises are recommended, AQSIQ's relevant regulations shall be followed.

Article 32 The manufacturers for exported aquatic products shall set up the perfect quality safety control system, which is traceable, so as to guarantee that the fresh-keeping agent, antiseptic, water-keeping agent and color-keeping agent are not improperly used in the aquatic products.

The manufacturers for exported aquatic products shall carry out the self-inspection on such poisonous substances as microbe, insecticides & veterinary medicine residual and pollutant on the raw materials and finished products. If the self-inspection is unavailable, the qualified inspection & testing agency shall be entrusted to conduct the inspection.

Article 33 As the aquatic products are processed, the production batch control shall be carried out by the manufacturers for exported aquatic products on the basis of aqua farm. For the aquatic products from different fisheries, the raw materials thereof shall not be processed as the same production batch. From raw materials to finished products, the production batch no. shall be kept unchanged.

The marking of production batch no. shall be separately specified.

Article 34 The manufacturers for exported aquatic products shall set up the examining records for raw material procurement and examine the attached supply certificate for the raw materials. The records for supply examining shall be authentic and kept for at least two years.

The manufacturers for exported aquatic products shall set up the ex-work examining system to examine the qualification and safety conditions of the ex-work aquatic products as well as truly record the name, specification, quantity, production date, production batch no., qualification no., purchaser name & liaison and selling date of the aquatic products.

Examining records for ex-work aquatic products shall be authentic and kept for at least two years.

Article 35 The packing label for the exported aquatic products shall be subject to the requirements as specified by the importing country or region. The importing country or region shall be clearly marked on the package for delivery.

Article 36 As specified by AQSIQ, the manufacturers for exported aquatic products or the agents thereof shall ask the local inspection & quarantine agency to carry out the inspection on the strength of trading contract, manufacturer’s test report or ex-work qualification and delivery note.

As the exported aquatic products are delivered for inspection, the written certificate shall be available to verify the content of poisonous substances such as drug residual, heavy metal and microbe meet the requirements as specified by the importing country or region and China.

Article 37 Based on the risk analysis, the pathogenic microbe, insecticides & veterinary medicine residual and pollutant in the exported aquatic products shall be sampled by the inspection & quarantine agency; also, examining and supervision shall be conducted for the quality safety control system during the production & processing of exported aquatic products.

Article 38 For the exported aquatic products without sampling, the inspection & quarantine agency shall examine the test report and shipment records thereof as required by the importing country or region, so as to carry out the comprehensive appraisal according to the daily supervision, monitoring and sampling. The relevant inspection & quarantine certificate could be issued for meeting the requirements, or the notice for disqualification shall be issued.

Article 39 The manufacturers for exported aquatic products shall ensure that the transpiration tools for exported aquatic products are provided with good sealing performance, so as to keep the aquatic products

from pollution; also, the temperature demanded for transportation shall be guaranteed. In addition, sterilization shall be carried out as specified and relevant records shall be available.

Article 40 The manufacturers for exported aquatic products shall ensure that the goods are in conformity with the certificate and relevant records for delivery shall be available. The spot check shall be conducted by the inspection & quarantine agency. For the exported aquatic products passing the inspection at local area, they shall not be allowed to pass if the inconformity thereof to the certificate is found by the inspection & quarantine at the port.

Article 41 The effective period for inspection & quarantine of exported aquatic products shall be

(I) Frozen (fresh-keeping) products: seven days;

(II) Frozen dry products and independently frozen products: four months;

(III) Other aquatic products: six months.

The exported aquatic products shall be re-inspected in case of exceeding the effective period of inspection and quarantine. Also, the inspection and quarantine of exported aquatic products shall be separately conducted if required particularly by the importing country or region.

Chapter 4 Supervision and Management

Article 42 AQSIQ shall carry out safety monitoring system for entry and exit aquatic products, formulate monitoring plans on basis of risk analysis, and real situation of inspection and quarantine, and identify the types and inspection items of entry and exit aquatic products from the country or region to be monitored.

In accordance with annual safety risk monitoring plans by AQSIQ for entry and exit aquatic products, inspection and quarantine bodies shall formulate and implement the implementation scheme of risk management for entry and exit aquatic products in their jurisdiction areas.

Article 43 AQSIQ and inspection & quarantine agencies shall carry out the risk management on entry and exit of aquatic products. The specific measures thereof shall be subject to the relevant regulations.

Article 44 The manufacturer, consignee and consignor of aquatic products for entry & exit shall carry out the production and operation legally.

The inspection & quarantine agency shall set up illegal behavior archiving system for the manufacturer, consignee and consignor of aquatic products for entry & exit, so as to archive and disclose the illegal behavior.

Article 45 In accordance with relevant regulations of food safety risk information management, AQSIQ and the inspection and quarantine bodies shall notify relevant departments, bodies and enterprises of safety risk information concerning entry and exit aquatic products, and in accordance with relevant regulations, submit reports.

Article 46 The coordination system shall be enhanced between the inspection & quarantine agency governing the archived aqua farm for exported aquatic products and that governing the manufacturer for exported aquatic products. The monitoring on aqua farm shall be regularly informed by the inspection & quarantine agency governing the archived aqua farm for exported aquatic products to that governing the

manufacturer for exported aquatic products; the manufacturer's examining on supply certification as well as quality safety of raw materials and finished products shall be regularly informed by the inspection & quarantine agency governing the manufacturer for exported aquatic products to that governing the archived aqua farm for exported aquatic products.

Article 47 In case the imported aquatic products have safety problems, which may or have caused the injury on the human body and life, the consignee shall actively recall such aquatic products and immediately report such safety problems to the local inspection & quarantine agency. If the consignee fails to make the above recall, the inspection & quarantine agency shall order the consignee to recall the aquatic products with such safety problems.

In case the exported aquatic products suffer from safety problems, which may or have caused the injury on the human body and life, the manufacturer for exported aquatic products shall actively recall such aquatic products and immediately report such safety problems to the local inspection & quarantine agency.

In case of recalling of aquatic products for entry and exit, it shall be timely reported by the inspection & quarantine agency to AQSIQ.

Article 48 The registered aqua farms for exported aquatic products shall be cancelled from qualification in case of the situations as below:

(I) Use or storage of drug and other poisonous substances forbidden by China and importing country or region; the adopted drug is not marked with the effective ingredient or use of the drug with forbidden medicine and medicine additive; the drug is not suspended as specified during the drug suspension period;

(II) Provision of fake supply certificate, transfer or transfer in disguised form of archiving no.;

(III) Concealing of major epidemic disease of aquatic products or failing to report such epidemic disease to the inspection & quarantine agency;

(IV) Refuse the management and monitoring from the inspection & quarantine agency;

(V) Fail to apply for the modification within 30 days after the name and legal representative of archived aqua farm are changed;

(VI) Fail to report the inspection & quarantine agency within 30 days after the size of aqua farm is enlarged; new drug or forage is adopted or quality safety system is substantially changed;

(VII) The goods are not exported within a year;

(VIII) The renewal of achieving is not applied as scheduled;

(IX) Fail to pass the annual examining.

Article 49 The inspection & quarantine agency could order the manufacturer of exporting aqua products to take corrective measures in case of one of the situations as below:

(I) The products are rejected by the importing country or region for the first time due to the disqualification in safety & health-related items such as pathogenic microbe, pollutant, insecticide & veterinary medicine;

(II) The consecutive sampling of three batches of products fails to meet the requirements for safety &

health;

(III) The source of raw materials is unknown; batch no. control is disordered;

(IV) During the daily inspection, the same disqualified item is found for three times within a year;

(V) Fail to establish the product feedback and recall system.

Article 50 In case the manufacturers for importing & exporting aquatic products have other violations against the laws, they shall be punished as per the relevant laws & administrative regulations.

Article 51 If the inspection & quarantine agency and personnel thereof violate laws & regulations and the measures as carrying out the inspection & quarantine on the imported & exported aquatic products, they shall be punished by the competent department at higher level.

Chapter 5 Supplementary Articles

Article 52 The Measures are subject to interpretation by AQSIQ.

Article 53 The Measures will come into effect on 1 June 2011. Also, the *Regulations on Inspection and Quarantine of Imported and Exported Aquatic Products* (AQSIQ Order No. 31) published on 6 November, 2002, shall be abolished simultaneously.

National Standards of People's Republic of China

GB 2733-2005

Hygienic Standard for Fresh and Frozen Marine Products of Animal Origin

Issued on: 2005-01-25 Implemented on: 2005-10-01

Issued by Ministry of Health of the People's Republic of China and National Standardization Management Committee

Foreword

The entirety of this national standard is compulsory.

The standard replaces the hygiene standards for seafood subsumed under GB 2733-1994 <hygienic standard for sea fish>, GB 2735-1994 < hygienic standard for cephalopods seafood>, GB 2736-1994 < hygienic standard for fresh water fish>, GB/T 2739-1981 < hygienic standard for naked carp fresh fish (Gymnocypris Przewalskii)>, GB 2740-1994 < hygienic standard for shrimp>, GB 2741-1994 < hygienic standard for prawn>, GB 2742-1994 < hygienic standard for oyster>, GB 2743-1994 < hygienic standard for sea crab>, GB 2744-1996 < hygienic standard for sea water shellfish>

As compared to the earlier relevant version GB 2733-1994, GB 2735-1994, GB2736-1994, GB/T 2739-1981, GB 2740-1994, GB 2741-1994, GB 2742-1994, GB 2743-1994, and GB 2744-1996, the key changes are as follows:

- Formatting of this standard was modified according to the format used in GB/T 1.1-2000
- GB 2733-1994, GB 2735-1994 was consolidated to form the new standards
- Extend the coverage of the standards to include all fresh and frozen marine products of animal origin
- Hygienic requirements for processes, label, package, transportation and storage was added
- Adopted CAC/GL 7-1991 guideline levels for methyl mercury in fish
- Added the indicators of lead, cadmium, PCB (Polychlorinated Biphenyls) and removed indicators for mercury

The standard was proposed by the Ministry of Health of the People's Republic of China.

The standard is implemented on Oct 1st 2005 with a transitional period of 1 year. Hence, all products that have been produced before Oct 1st 2005 are allowed to be sold up to Sep 30th 2006

The standard is drafted by the following units: Liaoning Province Food Supervision and Inspection Center, Shanghai Hygienic Supervision Center, Dalian Sanitation and Anti Epidemic Station, Jiangsu Province Disease Control and Prevention Center.

The standards are mainly drafted by Zheng Wang, Junwei Lou, Hong Zhang, Min Chen, Yuanmei Ding, Baojun Yuan, Yanping Cai.

The standard supersedes all the previous versions as follows,

- GB 2733-1981, GB 2734-1981, GB 2737-1981, GB 2738-1981, GBn 139-1981, GBn 150-1981. GBn 151-1981, GB 2733-1994
- GB 2735-1981, GB 2735-1994
- GB 2736-1981. GB 2736-1994

- GB 2739-1981
- GB 2740-1981, GB 2740-1994
- GB 2741-1981, GB 2741-1994
- GB 2742-1981, GB 2742-1994
- GB 2743-11994
- GB 2745-1981, GB 2744-1996

Hygienic Standard for Fresh and Frozen Marine

Products of Animal Origin

1. Scope

This standard specifies hygiene and inspection guidelines for products falling under fresh and frozen marine products of animal origin. This includes the hygiene requirement for the producing process, package, label, storage and transportation.

This standard is applicable to fresh and frozen marine products of animal origin.

2. Normative References

Relevant provision in the following ten standards will be referenced and enforced as part of this standard.

For any dated references listed in this article, subsequent amendments (excluding errata) or revision are not applicable to this standard. However, all parties, who previously agreed on the applicability of GB2733-2005, are encouraged to explore the possibility of using recent editions of the referenced standards listed below.

As for undated references, the latest edition will apply.

GB/T 5009.11 *Determination of Total Arsenic and Abio-Arsenic in Food*

GB/T 5009.12 *Determination of Lead in Foods*

GB/T 5009.15 *Determination of Cadmium in Foods*

GB/T 5009.17 *Determination of Mercury in foods*

GB/T 5009.44 *Analysis method for hygienic standard of meat and meat products*

GB/T 5009.45 *Analysis methods for hygienic standard for aquatic products*

GB/T 5009.190 *Determination of Polychlorinated Biphenyl in marine products*

GB 7718 *General Standard for the Labeling of Prepackaged Foods*

GB 14881 *General Hygienic Regulations for Food Enterprises*

SC 3001 *Classification and name of aquaculture and aquatic products*

3. Classifications

SC 3001 is applicable to this standard

4. Indicator Requirements

4.1 Sensory Indicators

Snail, river crab, crab, river shrimp, freshwater shellfish should be fresh

4.2 Physical and Chemical products

Requirements is in accordance with Table 1

Table 1: Chemical-Physical Index

Items		Indicator
TVB-N*/(mg/100g)		
Marine fish, prawn, cephalopoda	≤	30
Sea crab	≤	25
Fresh water fish, shrimp	≤	20
Marine shellfish	≤	15
Naked carp fresh fish, oyster	≤	10
Histamine*/(mg/100g)		
Mackerel	≤	100
Other fishes	≤	30
Lead (Pb)/(mg/kg)		
Fishes	≤	0.5
Inorganic arsenic/(mg/kg)		
Fishes	≤	0.1
Other aquatic products of animal origin	≤	0.5
Methyl mercury/ (mg/kg)		
Predator fish (shark, sailfish, tuna, pike)	≤	1.0
Other aquatic products of animal origin	≤	0.5
Cadmium (Cd)/(mg/kg)		
Fishes	≤	0.1
PCB/(mg/kg)	≤	2.0
PCB 138/(mg/kg)	≤	0.5
PCB 153/(mg/kg)	≤	0.5
a. Not applicable to fresh aquatic product b. Solely applicable to marine products and used in conjunct with the summation of PCB 28, PCB 52, PCB 101, PCB 188, PCB 138, PCB 153 and PCB 180.		

4.3 Pesticide Residues

The pesticide residues should be in accordance with national standard

5. Process of Manufacture

Requirements on manufacturing process should comply with GB 14881

6. Labels

Requirements on packaging label should comply with GB 7718.

7. Packaging

Packaging container and material must satisfy the relevant hygiene standards and regulations

8. Storage and Transportation

8.1 Storage

The frozen product should be sealed and stored in the frozen room of -15°C~-18°C for a maximum of nine months. Frozen products are prohibited to be stored together with substance that are poisonous, harmful or have an unpleasant smell.

8.2 Transportation

The frozen food should be kept refrigerated during transportation. Transport must be kept hygienic and transporting with substances that is poisonous, harmful and have an unpleasant smell is prohibited.

9. Inspection Methods

9.1 Sensory Inspections

Sensory sample testing will take place under sunlight after frozen food is being thawed.

9.2 Physical and Chemical inspections

9.2.1 TVB-N, in accordance with GB/T 5009.44

9.2.2 Histamine, in accordance with GB/T 5009.45

9.2.3 Inorganic arsenic, in accordance with GB/T 5009.11

9.2.4 Lead, in accordance with GB/T 5009.12

9.2.5 Cadmium, in accordance with GB/T 5009.15

9.2.6 Methyl mercury, in accordance with GB/T 5009.

9.2.7 PCB, in accordance with GB/T 5009.190

National Standards of People's Republic of China

GB 10136-2005

Hygienic Standard for Salt and Liquor-saturated Aquatic Products of Animal Origin

Issued on: 2005-01-25 Implemented on: 2005-10-01

Issued by Ministry of Health of the People's Republic of China and National Standardization Management Committee

Foreword

The entirety of this standard is mandatory

The standard replaces the hygiene standards for seafood subsumed under GB 10136-1988 <hygienic standard for crab paste (the ovary and digestive glands of crab)>

As compared to the earlier relevant version GB 10136-1988, the key changes are as follows,

- Formatting of this standard was modified according to the format used in GB/T 1.1-2000
- Hygienic requirement for processing, label, package, transportation and storage was added
- Extended the coverage for the standards
- Renamed the standard as Hygienic standard for salt and liquor-saturated aquatic products of animal origin
- Added the indicators for inorganic arsenic, methylmercury, TVB-N, PCB, vibrio parahemolyticus, shigella, and parasite
- Decrease the acceptable range of aerobatic bacteria from ≤50000 cfu/g to ≤ 5000 cfu/g

The standard is implemented on Oct 1st 2005 with a transitional period of 1 year. Hence, all products that have been produced before Oct 1st 2005 are allowed to be sold up to Sep 30th 2006.

Information in Appendix A and B are binding to the standards.

The standard is proposed by Ministry of Health of People's Republic of China

The standard is drafted by the following units: Shanghai hygienic supervision center, Liaoning Province food supervision and inspection center, Ningbo sanitation and anti epidemic station, Ningbo Shenye Laobanniang food products co. Ltd, Chengsi sanitation and anti epidemic station,

The standards are mainly drafted by Min Chan, Zhenhua Gu, Zheng Wang, Ling Ji, Zhixing Hu, Yueping Gong.

The standard supersedes all the previous versions as follows,

- GB 10136-1988

Hygienic Standard for Salt and Liquor-saturated

Aquatic Products of Animal Origin

1. Scope

This standard specifies the hygienic standard and inspection guidelines for products falling under salt and liquor-saturated aquatic products of animal origin, food additives, producing process, package, label, storage and transportation.

This standard is applicable to edible liquor-saturated aquatic products, products that require fresh mud snail, river crab, crab, shrimp, shellfish and fresh marine crab as raw material. This standard is also applicable to aquatic products that can be directly consumed after processing procedures such as cleaning (with water) and the removal of shell, gills and end tips of crab legs, using fresh portunid as its main ingredient

2. Normative References

Relevant provision in the following twelve standards will be referenced and enforced as part of this standard.

For any dated references listed in this article, subsequent amendments (excluding errata) or revision are not applicable to this standard. However, all parties, who previously agreed on the applicability of GB2733-2005, are encouraged to explore the possibility of using recent editions of the referenced standards listed below.

As for undated references, the latest edition will apply.

GB 2733 *Hygienic standard for fresh and frozen marine products of animal origin*

GB 2760 *Hygienic standard for food additives*

GB/T 4789.20 *Hygienic microorganism inspection for foods, inspection of aquatic food*

GB/T 5009.11 *Determination of Total Arsenic and Abio-Arsenic in Food*

GB/T 5009.12 *Determination of Lead in foods*

GB/T 5009.15 *Determination of Cadmium in foods*

GB/T 5009.17 *Determination of Mercury in foods*

GB/T 5009.26 *Determination of N-nitrite in foods*

GB/T 5009.44 *Analysis methods for hygienic standard for meat and meat products*

GB/T 5009.190 *Determination of Polychlorinated Biphenyl (PCB) in marine products*

GB 7718 *General Standard for the Labeling of Prepackaged Foods*

GB 14881 *General Hygienic Regulations for Food Enterprises*

3. Indicator Requirements

3.1 Raw material and accessory requirements

3.1.1 Requirements on raw material should comply with GB 2733. This includes ensuring the freshness of mud snail, river crab, crab, shrimp, and shellfish.

3.1.2 Requirements on accessory should comply with relevant regulations.

3.2 Sensory Indicators

The products should not have any peculiar smell and foreign matters

3.3 Physical and Chemical Indicators

Requirements is in accordance with table 1

Table 1: Chemical-physical Index

Items		Indicator
TVB-N*/(mg/100g)		
Crab meat and paste	≤	25
Inorganic arsenic/(mg/kg)	≤	0.5
Methyl mercury/ (mg/kg)		
Predator fish	≤	1.0
Other aquatic products of animal origin	≤	0.5
N-dimethylnitrosamine	≤	4
PCB/(mg/kg)	≤	2.0
PCB 138/(mg/kg)	≤	0.5
PCB 153/(mg/kg)	≤	0.5
a. Not applicable to fresh aquatic product b. Solely applicable to marine products and used in conjunct with the summation of PCB 28, PCB 52, PCB 101, PCB 188, PCB 138, PCB 153 and PCB 180.		

3.4 Microorganism Indicator

The indicator of microorganism indicator should be in accordance with table 2

Table 2: Microorganism Index

Items		Indicator
Aerobatic bacteria/ (cfu/g)	≤	5000
Coliform / (MPN/100g)	≤	30
pathogenic bacterium (salmonella, Vibrio parahemolyticus, Shigella, staphylococcus aureus)		Prohibited

3.5 Parasite Metacercariae Indicator

No parasite metacercariae should be found.

4. Food Additives

4.1 Requirements on food additives should comply with relevant regulations

4.2 The addition of the type and quantity of food additives should comply with GB 2760

5. Production Process

Requirements for food producing process should comply with GB 14881 and appendix A

6. Packaging

Packaging container and material must satisfy the relevant hygiene standards and regulations

7. Labels

Requirements on label should comply with GB7718 and appropriate temperature for storage must be indicated.

8. Storage and Transportation

Product should be stored in the place that is dry with good ventilation. Products should not be stored with poisonous, harmful, volatile and perishable substance with peculiar smell. If the product needs to be frozen, it should be stored at a temperature of 4°C or below.

8.2 Transportations

Product should be kept away from sunlight and rain during transportation. Products should not be transported with poisonous, harmful, volatile and perishable substance with peculiar smell. If the product needs to be frozen, it should be transported at a temperature of 4°C or below.

9. Inspection Methods

9.1 Sensory Inspections

Sample testing through visual, smell and tastes

9.2 Physical and Chemical inspections

9.2.1 TVB-N, in accordance with GB/T 5009.44

9.2.2 Inorganic arsenic, in accordance with GB/T 5009.11

9.2.3 Lead, in accordance with GB/T 5009.12

9.2.4 Cadmium, in accordance with GB/T 5009.15

9.2.5 Methyl mercury, in accordance with GB/T 5009.

9.2.6 PCB, in accordance with GB/T 5009.190

9.2.7 N-dimethylnitrosamine, in accordance with GB/T 5009.26

9.3 Microorganism Indicator inspections

In accordance with GB/T 4789.20

9.4 Parasite Metacercariae Indicator Inspections

In accordance with appendix B

Appendix A

Informative appendix

Hygiene standards for production and processing

A.1 Hygienic standard for raw materials

Raw material for salt and liquor-saturated aquatic products of animal origin should be uncontaminated, and comply with the requirements of standard 4.1. After passing the inspection and making a record, the raw materials can be used.

A.2 Hygienic standard for places and equipment

A designated location should be set up and dedicated for the sole production of salt and liquor-saturated aquatic products of animal origin. In accordance with the rational process of production and processing, there should be a designated workshop for storage and processing of raw materials, salt and liquor-saturated, maturing, package, and storing finished products. The floor of the workshop should be made of impermeable, non-absorbent, non-toxic and non-slip material with a moderate gradient. The coating of the wall should be made of impermeable, non-water absorbent and non-toxic material. Also, the wall should be made of either ceramic tiles or other anti- corrosive material which have a height of at least 1.5m. With regards to sections that may interact with the finished products (including final salt and liquor-saturate, maturing, and package), the place should be equipped with facilities to prevent dust and flies with designated isolated area for changing into clean clothes, washing hand and disinfecting.

A.3 Hygienic standard of processing

A.3.1 Hygienic standard of tools and containers

The tools and containers used for the production and the processing of salt and liquor-saturated aquatic products of animal origin should meet the relevant hygienic requirements. Also, the tools and containers that come into contact with the final product should be thoroughly washed and disinfected.

A.3.2 Personal hygiene

Personnel working on producing of salt and liquor-saturated aquatic products of animal origin should undergo health examination and training relating to the required hygiene standards. After which they must obtain a certification to verify that they have passed both the health examination and training. Throughout processing, personnel involved should wear clean uniforms and caps and wash their hands thoroughly. In addition, they should wear mask and disinfect their hands when handling the finished products.

A.3.3 Formulation and process hygiene

Producing and processing of salt and liquor-saturated aquatic products of animal origin should strictly comply with the hygiene regulation of formulation and process.

A.3.4 Hygienic management

Corporation that manufactures salt and liquor-saturated aquatic products of animal origin should employ different techniques to analyze risk and control hygiene standards for critical processes such as storing of raw material, processing and final product

A.4 Hygiene standards of final products

A.4.1 Inspection of final products

All final Salt and liquor-saturated aquatic products of animal origin should meet the hygienic requirements of this standard. Every batch of product must pass the inspection before being dispatched.

A.4.2 Storage and sales for final products

Final products should be stored in a clean and hygienic warehouse. It is prohibited to store the final products with poisonous and harmful substances. As for frozen products, they should be stored or sold in designated refrigerator with temperature below 4°C

A.4.3 Transportation of end products

Conveyance for transporting final products should be kept dry and hygienic, avoid shock, sunlight, and rain. Goods should be handled with care while loading and unloading. Also, it is prohibited to transport the final product with poisonous and harmful substances. As for frozen products, it should be kept refrigerated while transporting.

Appendix B

Normative appendix

Parasites metacercariae inspection

B.1 Reagent

Artificial digestive juices: Dissolve 5.5g of pepsins (roughcast) in 90ml of distilled water. Then add 0.7ml concentrated hydrochloric acid. This is followed by adding water to the mixture till the mixture reaches a volume of 100ml. Shake and mix well before letting it cool for 15 minutes.

B.2 Device

a) Microscope

b) Water bath box or incubation box at 37°C

c) Food grinder

B.3 Preparation for foods

Obtain a sample of meat to be tested, minced it before putting it into a conical flask. Add corresponding amount of artificial digestive juices (1:1) and mix them well. Incubate the mixture in a water bath with a temperature of 35°C~37°C for 4~5 hours. This process is done to break down the meat particles. After the meat particles completely dissolve, take a sample of the solution. Add appropriate amount of distilled water and stir it well. After that, leave it to settle down for 20-30min. Repeat this process until you obtain a clear solution. The precipitation will be used.

B.4 Inspection

Use distilled water to dilute the above mentioned precipitate. Concurrently, observe for possible parasite activities under the microscope.

National Standards of People's Republic of China

GB 10144-2005

Hygienic Standard for Dried Aquatic Products of Animal Origin

Issued on: 2005-01-25 Implemented on: 2005-10-01

Issued by Ministry of Health of the People's Republic of China and National Standardization Management Committee

Foreword

The entirety of this standard is mandatory

The standard replaces the hygiene standards for dried aquatic products of animal origin subsumed under GB 10144-1988 <hygienic standard for dry pollack>, GB 16324-1996 <hygienic standard for dried marine shellfish>, GB 16328-1996 < hygienic standard for grilled fish>

As compared to the earlier relevant version GB 10144-1988, GB 16324-1996, and GB 16328-1996, the key changes are as follows:

- Formatting of this standard was modified according to the format used in GB/T 1.1-2000
- GB 10144-1988, GB 16324-1996, and GB 16328-1996 were consolidated to form the new standards.
- Modified the function of GB 10144-1988, GB 16324-1996, and GB 16328-1996 and added the hygienic standard for raw materials, food additives, processing, labels, package, transportation and storage
- Extend the coverage of the standard to include all dried products that uses fresh aquatic products of animal origin as raw material with or without extra ingredients.
- Added the indicator of inorganic arsenic and removed the indicator of sodium and moisture
- Modified the indicator of peroxide limits

The standard is implemented on Oct 1st 2005 with a transitional period of 1 year. Hence, all products that have been produced before Oct 1st 2005 are allowed to be sold up to Sep 30th 2006.

The standard was proposed by Ministry of Health of People's Republic of China

The standard is drafted by the following units: Liaoning Province food supervision and inspection center, Jiangsu Province Disease Control and Prevention Center, Hangzhou Health Authority, Ministry of Health Hygienic Supervision Center, Shanghai hygienic supervision center, Beijing Disease Control and Prevention Center

The standards are mainly drafted by Jiangping Lee, Baojun Yuan, Yanping Cai, Yunyan Zheng, Baorong Fan, Zhenghua Gu, Xiuying Ding.

The standard supersedes all the previous versions as follows,

- GB 10144-1988,
- GB 16324-1996,
- GB 16328-1996

Hygienic Standard for Dried Aquatic Products of Animal Origin

1. Scope

The standard specifies hygienic standard and inspection guidelines for product falling under dried aquatic products of animal origin, producing process, package, label, storage and transportation.

The standard is applicable to all dried products that use fresh aquatic products of animal origin as raw material with or without any supplementary ingredients.

2. Normative References

Relevant provision in the following eight standards will be referenced and enforced as part of this standard.

For any dated references listed in this article, subsequent amendments (excluding errata) or revision are not applicable to this standard. However, all parties, who previously agreed on the applicability of GB10144-2005, are encouraged to explore the possibility of using recent editions of the referenced standards listed below.

As for undated references, the latest edition will apply.

GB/T 2733 *Hygienic standard for fresh and frozen marine products of animal origin*

GB 2760 *Hygienic standard for food additives*

GB/T 4789.20 *Hygienic microbiology inspection for food, inspection of aquatic food*

GB/T 5009.11 *Determination of Total Arsenic and Abio-Arsenic in food*

GB/T 5009.12 *Determination of Lead in foods*

GB/T 5009.37 *Analysis methods of hygienic standard for edible vegetable oil*

GB 7718 *General Standard for the Labeling of Prepackaged Foods*

GB 14881 *General Hygienic Regulations for Food Enterprises*

3. Indicator Requirements

3.1 Raw Material requirements

Requirements on raw materials should comply with the relevant regulations.

3.2 Sensory Indicators

No mildew, no infestation, no peculiar smell and no foreign matters

3.3 Physical and Chemical indicators

Refer to table 1

Table 1: Chemical-Physical indicators

Items		Indicator
Inorganic arsenic/(mg/kg) Shellfish and shrimp prawn	≤	1.0
Lead (Pb)/(mg/kg) Fishes	≤	0.5
Acid value (by fat)(KOH)/(mg/g)	≤	130
Peroxide value (by fat)/(g/100g)	≤	0.60

3.4 Microbiology Indicators

Microbiology indicator of edible aquatic food of animal origin should be compliant with table 2.

Table 2: Microbiology Indicators

Items		Indicator
Aerobatic bacteria count/(cfu/g)	≤	3000
Coliform/(MPN/100g)	≤	30
Pathogen (Salmonella, Staphylococcus aureus, Shigella, Vibrio parahaemolyticus)	≤	Prohibited

4. Food Additives

4.1 Requirements on food additives should comply with relevant regulations

4.2 The addition of the type and quantity of food additives should comply with GB 2760

5. Production Process

Requirements on the production process should comply with GB 14881

6. Packages

Packaging container and material must satisfy the relevant hygiene standards and regulations

7. Labels

Requirements on the labels should comply with GB 7718

8. Storage and Transportation

8.1 Storage

Product should be stored in the place that is dry with good ventilation. Products should not be stored with poisonous, harmful, volatile and perishable substance with peculiar smell. If the product needs to be frozen, it should be stored or transported at the regulated temperature.

8.2 Transportation

Product should be kept away from sunlight and rain during transportation. Products should not be transported with poisonous, harmful, volatile and perishable substance with peculiar smell. If the product needs to be frozen, it should be transported at the regulated temperature.

9. Inspection Methods

9.1 Sensory Inspections

A sample of the product will be inspected visually under sunlight. The color, luster, shape, odor and the taste of the edible dried aquatic products will be inspected.

9.2 Physical and Chemical Inspections

9.2.1 Inorganic arsenic, in accordance with GB/T 5009.11

9.2.2 Lead, in accordance with GB/T 5009.12

9.2.3 Acid value, in accordance with GB/T 5009.37

9.2.4 Peroxide value, in accordance with GB/T 5009.37

9.3 Microbiology Indicator, in accordance with GB/T 4789.20

National Standards of People's Republic of China

GB/T 30891-2014

Practice of Sampling Plans for Aquatic Products

Issued on 2014-09-30 Implemented on: 2015-03-01

Issued by General Administration of Qualify Supervision, Inspection and Quarantine of the People's Republic of China & Standardization Administration of China

Foreword

This standard has been drafted in accordance with the regulations given by GB/T 1.1—2009.

This standard has been set up by the Ministry of Agriculture of the People's Republic of China.

This standard has been put under centralized management of the Aquatic Product Processing Sub-branch Technical Committee of the National Aquatic Product Standardization Technical Committee（SAC/TC 156/SC 3）.

This standard has been drafted by the Yellow Sea Fisheries Research Institute of Chinese Academy of Fishery Sciences, Freshwater Fisheries Research Institute of Jiangsu Province, National Quality Supervision and Inspection Center of Aquatic Products, Wang Lianzhu, Zhu Wenjia, Zhang Meiqin, Guo Yingying, Lu Lina, Jiang Yanhua, Yao Lin, Zhai Yuxiu, Li Zhaoxin and Song Chunli.

Practice of Sampling Plans for Aquatic Products

1. Scope

This standard stipulates the terms and definition of sampling for aquatic products and their processed forms, sampling preparation, sampling methods, sampling records, transportation and storage.

This standard is applicable to the sampling for aquatic products and their processed forms when they are under production inspection and supervision during the cultivation, fishing, processing and marketing.

2. Normative reference

The following documents are indispensible to the application of this document. Only dated versions of the dated reference documents are applicable to this document. The latest versions of documents without dates, including all modification lists, are applicable to this document.

GB/T 2828.1—2012 Procedure of sampling inspection by counting

Part 1: Lot-by-lot inspection sampling plans should be compliant with AQL (Acceptance Quality Limit) search

GB/T 3358.2—2009 Vocabulary and symbols of statistics

Part 2: Applied statistics

SC/T 3012 Terms for aquatic product processing

3. Terms and definitions

All the following terms and definitions under GB/T 2828.1—2012, GB/T 3358.2—2009 and SC/T 3012 are applicable to this document.

3.1 Sampling

Operation to sample products or constitute samples

(GB/T 3358.2—2009, Definition 1.3.1)

3.2 Audit sampling

Sampling independently carried out by the supervisor on the overall received products via acceptance inspection to determine whether they are qualified.

3.3 Item

An object that can be independently described and considered.

For example: an independent object, an appropriate amount of bulk cargo, a service, an activity, a person, a system or their combination

(GB/T 3358.2—2009, Definition 1.2.11)

3.4 Sample

A single product or a set of products from a group that can provide the group information

(GB/T 2828.1—2012, Definition 3.1.15)

3.5 Sample size

Amount of unit products contained in the sample

GB/T 30891—2014

(GB/T 2828.1—2012, Definition 3.1.16)

3.6 Test sample

Manufactured products that can be used as samples for one or more tests or analyses.

(GB/T 3358.2—2009, Definition 5.3.11)

3.7 Acceptance number

Upper limit value for the acceptable number of defects or disqualified products among the received groups of samples during the count sampling inspection.

3.8 Destructive test

An inspection method that is likely to damage or destroy the sample's original character and quality during the inspection.

4. Sampling preparation

To choose representative samples from the aquatic products or processed aquatic products for test is one of the key ways to ensure quality evaluation or quality under security detection. The following preparations shall be made:

4.1 Technical preparation

4.1.1 To determine the target of sampling. Different sampling inspections require different sampling methods, so we should make clear the inspection types in delivery inspections, delivery and acceptance of demanders or both demanders and suppliers, arbitration inspection and supervisory inspection.

4.1.2 To be familiar with the character, quality safety conditions, manufacturing techniques and process control, situation of the production area or producers, product standards and inspection regulations.

4.1.3 To clearly determine what to inspect and analyze, including the inspection items such as senses, physics, chemistry and microorganism, and to analyze whether the inspections are destructive.

4.1.4 To choose the sampling methods. To determine the sampling ways, sampling detection level and quality level as the above circumstances may require.

4.1.5 To establish a quality control measure for sampling

4.2 Staff preparation

4.2.1 Staff responsible for sampling shall be trained before their work in various fields including knowledge and product standards related to sample products, determined sampling methods and quantities, notices when sampling and sealing samples, as well as notices during the sample transportation.

4.2.2 Every sampling team shall comprise at least two persons, with at least one person experienced in sampling.

4.3 Material preparation

4.3.1 Tools

a) To prepare the following tools according to different characters of the chosen samples: sample collectors (powder samples), thermometers (to measure the on-site temperature), position indicators, flexible or straight rulers (to measure the length), sample sacks, warm-boxes (frozen or fresh samples), cameras, etc.

b) To prepare aseptic containers to contain samples for microbial inspection.

4.3.2 Documents such as records

Letter of introduction, valid documentation for samplers, sampling schedule (list) , assignment book, sampling rules, relevant record chart or questionnaire, seal, folders, stationery including pens and paper, traffic map, sampling position map (cultivation regions), etc.

5. Sampling methods

5.1 Basic requirements for samples

5.1.1 As to live samples, those which can be representative of the whole product group shall be chosen instead of the special ones such as the deformed or the sick.

5.1.2 As to fresh samples, those which can be representative of the whole product group shall be chosen instead of those fresh or stale ones that are especially picked out.

5.1.3 As to the samples for fish medicine residue inspection, those grown-up aquatic products that have passed their withdrawal periods and are ready to be on the market shall be chosen.

5.1.4 Those bred aquatic products which are still at their growth stage or haven't passed their withdrawal periods can be used as samples for inspection against forbidden drugs.

5.1.5 Samples for microbiological detection shall be independently picked out and then stored in an aseptic container under the temperature from 0 to 10℃ They shall be sent to the laboratory for test in 48 hours.

5.1.6 Processed aquatic products shall be sampled according to the batch numbers given by the enterprise. Batch numbers for the same samples shall be the same. Samples shall be chosen from the enterprise's finished product warehouse and packaged. There shall be at most two chosen samples at the same enterprise. Varieties or specifications shall not be repetitive.

5.2 Sampling for enterprise production

5.2.1 The lot grouping rule

5.2.1.1 As to the bred live aquatic products, those which are caught from the same pond or farm with the same breeding conditions on the same day can be regarded as an inspection lot.

5.2.1.2 As to the processed aquatic products, those which are made of the same raw materials under the same conditions and packaged on the same day can be regarded as an inspection lot.

5.2.2 Sampling methods

5.2.2.1 The bred aquatic products shall pass the nondestructive inspection in accordance with the rules of Table 1 during their delivery inspection. As to the destructive inspection, about 1000 grams of samples shall be chosen from every group at random for test.

Table 1 Sampling methods and sensory inspection rules Unit: pcs

Total amount	Sample size	Acceptance number [a]	Rejection number [b]
2 ~15	2	0	1
16 ~25	3	0	1
26 ~90	5	0	1
91 ~150	8	1	2
151 ~500	13	1	2
501 ~1,200	20	2	3
1,201 ~10,000	32	3	4
10,001 ~35,000	50	5	6
35,001 ~500,000	80	7	8
>500,000	125	10	11
a .Acceptance number: Products whose disqualified samples are found to be less than or equal to the acceptance number shall be regarded as qualified ones. b .Rejection number: Products whose disqualified samples are found to be more than or equal to the rejection number shall be regarded as disqualified ones.			

5.2.2.2 The aquatic products shall pass the nondestructive inspection in accordance with the rules of A.1 in Appendix A during their delivery inspection. As to the destructive inspection, samples shall be chosen from the same group of products at random with a bottle or bag as the unit. As to the products amounting to more than 1,500 boxes, 4 boxes shall be chosen while 2 shall be chosen from less than 1,500 boxes. Then three bottles or bags of the products shall be picked out from every box for inspection.

5.3 Supervision, random checking and sampling

5.3.1 Sampling for nondestructive inspection

5.3.1.1 When supervising and randomly checking groups of processed aquatic products, see A.2 in Appendix A for sampling.

5.3.1.2 When supervising and randomly checking fresh live aquatic products, see Table 1 for sampling and

judging.

5.3.2 Sampling for destructive inspection

5.3.2.1 The lot grouping rule

Groups of fresh, live aquatic products and the processed aquatic products shall comply with the following regulations:

a) As to the fresh live aquatic products, those which are kept in the same pond or farm under the same breeding conditions can be regarded as an inspection lot.

b) As to the caught aquatic products and fresh products on the market, those which are of the same origin and size can be regarded as an inspection lot.

c) Processed aquatic products shall be sampled according to the batch numbers given by the enterprise.

d) Products on the market shall be sampled according to the batch numbers given by the products.

5.3.2.2 Sampling for caught and bred aquatic products

See sampling for caught and bred aquatic products in Table 2. See the sample treatment and manufacture in Appendix B.

Table 2 Sampling for caught and bred aquatic products

Sample name	Sample amount [a]	Sample testing amount/g
Fish	≥3 pcs	≥ 400
Shrimps	≥10 pcs	≥ 400
Crabs	≥5 pcs	≥ 400
Shellfish	≥3 kg	≥ 700
alga	≥ 3 pcs	≥ 400
Sea cucumbers	≥ 3 pcs	≥ 400
Tortoise & turtles	≥ 3 pcs	≥ 400
others	≥ 3 pcs	≥ 400
a .The amount listed in the table is the minimum sample volume. During the actual operation, samples shall be chosen according to the sample size on the basis of the final sample volume.		

5.3.2.3 Sampling in production enterprises

In production enterprises (breeding or processing), sampling for aquatic products or processed aquatic products shall comply with the following regulations:

a) More than 1 kg of samples (at least 4 packaging bags) shall be chosen from every group. Half of the samples shall be kept in the inspected enterprise for re-inspection if there is any dispute over the result. The other half shall be taken by the samplers themselves for test.

b) Samples shall be chosen from the qualified products which enterprises have inspected first. The chosen sample shall not be less than 20 kg. The inspected enterprise shall sign and stamp the sampling list for determination.

5.3.2.4 Sampling on the sales market

Aquatic products and their processed products shall comply with the following regulations when being sampled on the sales market:

a) More than 1 kg of samples (at least 4 packaging bags) shall be chosen from every group. Half of the samples shall be kept in the inspected enterprise for re-inspection when there is any dispute over the results. The other half shall be taken back by the samplers for test. If the inspected enterprise can't ensure the integrity of the samples, both sides shall seal them and sign for confirmation before the samplers take them back for re-inspection when there is any dispute over the results.

b) Sampling list shall be filled in when packaged samples are chosen at random on the sales market. The store shall sign and/or stamp the list. The enterprise shall help the samplers determine the chosen samples and the samplers shall be informed of the productions and distribution of samples.

c) When chosen on the sales market, bulk samples shall be from at least three locations of the package including the upper, middle and lower points so as to make sure they are representative.

6. Sampling record and sealed sample of supervision and random checking

6.1 In the sampling record, product names, trademarks, specifications, batch numbers, sample quantities, stock, sampling amount shall be carefully filled in. Characters and packaging methods of the products, as well as the transportation ways of the chosen samples, shall be accurately described.

6.2 The name (full name consistent with that on the stamp), address, telephone, fax, character and required information of inspected enterprises and manufacturers shall be carefully filled in and signed by the accompanying samplers from the inspected enterprise after being signed for confirmation by samplers(two persons). The sampling list shall be stamped by both the sampling unit and the inspected unit (if the inspected unit can't offer its stamp, identified persons shall sign for confirmation.)

6.3 Samples shall be well kept by the samplers who shall take them back and store them according to the storage methods shown in product performance standards so as to maintain their originality. Samples shall not be exposed to direct sunshine, soaked, polluted or lost.

6.4 When being sealed, samples shall be placed in cartons and sealed with seals (at least two on both the top and bottom sides) and signed by samplers for the inspected enterprise to store.

7. Sample storage and transportation

7.1 Sample storage

7.1.1 Live aquatic products

Live aquatic products shall be kept alive or, if unable to survive, can be killed and kept in a way to store fresh aquatic products.

7.1.2 Fresh aquatic products

Samples of fresh aquatic products shall be kept under the temperature from 0 to 10°Cin a warm-box or with some necessary measures and sent to the laboratory as soon as possible (usually within 2 days)after being picked out so as to keep them fresh.

7.1.3 Frozen aquatic products

Samples of frozen aquatic products shall be kept in the warm-box or with some necessary measures so as to ensure that they are frozen and will not melt or go bad before arriving at the laboratory.

7.1.4 Dried aquatic products

Dried aquatic products shall be kept in sealed plastic or similar bags. Be careful not to let them absorb or lose moisture so as to ensure their uniform quality during the process from sampling to the laboratory.

7.1.5 Other aquatic products

Other aquatic products shall also be kept in sealed plastic or similar bags. Be careful not to let them absorb or lose moisture so as to ensure their uniform quality during the process from sampling to the laboratory. Cold storage facilities shall be used when necessary.

7.1.6 Samples for microbial inspection

Samples for microbial inspection shall be stored in unpolluted environments under low temperatures so as to remain in their frozen forms. Samples of fresh and live aquatic products shall remain in their original forms as much as possible. They shall be sent to the laboratory within 48 hours after being picked out, during which their microbial content will not undergo great changes.

7.2 Sample transportation

7.2.1 When performing supervision and random checking, the samples shall be taken back to the laboratory by samplers themselves and handed over to the sample receivers.

7.2.2 When samples can’t be taken back by samplers themselves due to special conditions, they shall, after being signed by the samplers, be kept in sealed cartons or other containers and handed over to the laboratory to be well stored by a specially-assigned person. Sample receivers in the laboratory shall receive the samples after samplers have confirmed them.

Appendix A

(The normative appendix)

Sampling plan

A.1. Sampling plan I (Test level I, AQL=6.5)

A.1.1. When the net content weighs 1 kg or less, see the sampling plan in A.1.

Table A.1 Sampling plan I when the net content weighs 1 kg or less

Total volume(N)	Sample amount (n)	Acceptance number(c)
≤4,800	6	1
4,801~24,000	13	2
24,001~48,000	21	3
48,001~84,000	29	4
84,001~144,000	38	5
144,001~240,000	48	6
>240,000	60	7

A.1.2. When the net content weighs more than 1 kg but less than 4.5 kg, see the sampling plan in A.2.

Table A.2 Sampling plan I when the net content weighs more than 1 kg but less than 4.5 kg

Total volume(N)	Sample amount (n)	Acceptance number(c)
≤2,400	6	1
2,401~15,000	13	2
15,001~24,000	21	3
24,001~42,000	29	4
42,001~72,000	38	5
72,001~120,000	48	6
>120,000	60	7

A.1.3. When the net content weighs more than 4.5 kg, see the sampling plan in A.3.

Table A.3 Sampling plan I when the net content weighs more than 4.5 kg

Total volume(N)	Sample amount (n)	Acceptance number(c)
≤600	6	1
601~2,000	13	2
2,001~7,200	21	3
7,201~15,000	29	4
15,001~24,000	38	5
24,001~42,000	48	6
>42,000	60	7

A.2. Sampling plan II (Test level II, AQL=6.5)

A.3. When the net content weighs 1 kg or less, see the sampling plan in A.4.

Table A.4 Sampling plan II when the net content weighs 1 kg or less

Total volume(N)	Sample amount (n)	Acceptance number(c)
≤4,800	13	2
4,801~24,000	21	3
24,001~48,000	29	4
48,001~84,000	38	5
84,001~144,000	48	6
144,001~240,000	60	7
>240,000	72	8

A.4. When the net content weighs more than 1 kg but less than 4.5 kg, see the sampling plan in A.5.

Table A.5 Sampling plan II when the net content weighs more than 1 kg but less than 4.5 kg

Total volume(N)	Sample amount (n)	Acceptance number(c)
≤2,400	13	2
2,401~15,000	21	3
15,001~24,000	29	4
24,001~42,000	38	5
42,001~72,000	48	6
72,001~120,000	60	7
>120,000	72	8

A.5. When the net content is more than 4.5 kg, see the sampling plan in A.6.

Table A.6 Sampling plan II when the net content weighs more than 4.5 kg

Total volume(N)	Sample amount (n)	Acceptance number(c)
≤600	13	2
601~2,000	21	3
2,001~7,200	29	4
7,201~15,000	38	5
15,001~24,000	48	6
24,001~42,000	60	7
>42,000	72	8

Appendix B

(Informative annex)

Specimen preparation of bred and caught aquatic products

B.1. Fish

Rinse at least 3 fish before removing their heads, bones and entrails. Then mince their editable parts such as the flesh and skins and evenly mix them for later use. The sample shall weigh 400 g and be divided into two parts. One is for test and the other is for reserve.

B.2. Shrimps

Rinse at least 10 shrimps before removing their heads, shells and intestinal glands. Then mince the whole shrimp and evenly mix them for later use. The sample shall weigh 400 g and be divided into two parts. One is for test and the other for reserve.

B.3. Crabs

Rinse at least 5 crabs and mince their edible parts. Then evenly mix them for later use. The sample shall weigh 400 g and be divided into two parts. One is for test and the other for reserve.

B.4. Shellfish

Rinse the shellfish and detach the soft tissues from the shells. Then collect all the soft tissue and body fluid homogenate. The sample shall weigh 700 g and be divided into two parts. One is for test and the other for reserve.

B.5. Algae

Rid the sample of impurities such as mud and sand and make them into homogenate. The sample volume shall be 400 g and divided into two parts. One is for test and the other for reserve.

B.6. Tortoise & turtles

Rinse at least 3 and mince their edible parts. Then evenly mix them for later use. The sample shall weigh 400 g and be divided into two parts. One is for test and the other for reserve.

B.7. Sea cucumbers

Rinse at least 3 sea cucumbers and mince their edible parts. Then evenly mix them for later use. The sample shall weigh 400 g and be divided into two parts. One is for test and the other for reserve.

Specific Aquatic Product Species

GBT 18108-2008 Fresh Marine Fish

National Standards of People's Republic of China

GB/T 18108-2008

Fresh Marine Fish

Issued on: 2008-08-22 Implemented on: 2008-12-01

Issued by Ministry of Health of the People's Republic of China and National Standardization Management Committee

Foreword

The standard replaces the hygiene standards for fresh marine fish subsumed under GB/T 18108-2000 <Fresh marine fish>.

As compared to the earlier relevant version GB/T 18108-2000, the key changes are as follows:

- Supplemented the express of “Sensory Requirements”
- Added “Cooking Experiments” into “Sensory Requirements”
- Removed the regulation of plate gill fish in TVB-N indicators
- Added the permitted limit indicator of Methylmercury, Lead, Cadmium, PCBs, Oxytetracycline, Sulfa (the entire), Florfenicol

The standard is put forward by Agriculture Department of People’s Republic of China.

The standard is centralized by Chinese Academy of Fishery Sciences, Yellow Sea Fisheries Research Institute and Chinese Academy of Fishery Sciences.

The standard is drafted by Shanghai Fisheries University, Yangzi River Academy fo Fishery of Chinese Academy of Fishery Sciences.

The main draftsmen are Lianzhu Wang, Hongping Zhao, Yuxiu Qu, Kailiang Leng, Tianhong Lou.

The standard will replace all the previous versions

- GB/T 18108-2000

Fresh Marine Fish

1. Scope

The standard specifies for technical requirements, experiments method, inspection regulation as well as label, package, transportation and storage of fresh marine fish.

The standard applies to unprocessed fresh marine fish after being captured, chilled fresh marine fish and only eviscerated without other processing fresh marine fish.

2. Normative references

Relevant provision in the following nine standards will be referenced and enforced as part of this standard.

For any dated references listed in this article, subsequent amendments (excluding errata) or revision are not applicable to this standard. However, all parties, who previously agreed on the applicability of GB/T 18108-2000, are encouraged to explore the possibility of using recent editions of the referenced standards listed below.

As for undated references, the latest edition will apply.

GB/T 5009.11 *Determination of Total Arsenic and Abio-Arsenic in Food*

GB/T 5009.12 *Determination of Lead in Foods*

GB/T 5009.15 *Determination of Cadmium in Food*

GB/T 5009.17 *Determination of Total Organic-mercury and Mercury in Food*

GB/T 5009.45-2003 *Standards for Analysis of Aquatic Health Standards*

GB/T 5009.190 *Determination of indicative PCBs in foods*

SC/T 3015 *Determination of Oxytetracycline, tetracycline, chlortetracycline residues in aquatic products*

SC/T 3016-2004 *Standards for Aquatic Sampling Methods*

SC/T 3032 *Determination of TVB-N in aquatic products*

Agriculture Department No. 958 bulletin 12-2007 *Inspection of sulfa drugs residues in aquatic products- Liquid chromatography*

Agriculture Department No. 958 bulletin 12-2007 *Inspection of chloramphenicol, thiamphenicol, florfenicol residues in aquatic products- Liquid chromatography- Gas chromatography*

3. Requirements

3.1 Sensory Requirements

Sensory requirements refer to table 1.

Table 1

Content	1st class	2nd class	3rd class
Fish body	Stiff and firm, complete, possesses the color of fresh fish, the luster is light, pattern is clear, no falling scales	Rather soft, complete, possesses the color of fresh fish, the luster is darker, the pattern is clear, a few falling scales	Much softer, somewhat complete, broken belly, the luster is much darker, the pattern is clear, few falling scales and is not close to the fish body
Eye balls	Eye balls are complete, cornea is clear and bright	Eye balls are flat, cornea is rather clear and bright	Eye balls are concaved in shape, cornea is turbid
Gill	Gill filaments are clear, light red with little mucilage	Gill filaments are clear, dark red with some mucilage	Gill filaments are less clear, pink to brown with mucilage
Odor	Marine creatures have a fishy odor		Little peculiar odor is allowed, but should not stink or ammonia stench
Impurities	Internal organs are thoroughly removed		
Cooking experiment	The fish has palatable taste, texture of muscle is elastic, it is fragrant and delicious	The fish has less palatable taste, the texture of muscle is rather soft and rather fragrant and delicious	The fish has much less palatable taste, the texture of muscle is soft and rather soft and delicious

3.2 Safety Indicators

Regulation of safety indicators refer to table 2

Table 2 Safety Indicators

Content	Indicators		
	1st class	2nd class	3rd class
TVB-N/(mg/100g)	≤15	≤20	≤30
Histamine/(mg/100g)	≤100 (Saury, mackerel horse mackerel and tuna-silver skin and red meat fish) ≤30 (other species)		
Inorganic arsenic/(mg/100g)	≤0.1		
Methyl mercury/(mg/100g)	≤1.0 (Shark, swordfish and tuna-predatory fishes) ≤0.5 (other species)		
Lead (Pb)/(mg/100g)	≤0.5		
Cadmium (Cd)/(mg/100g)	≤0.1		
PCBs/(mg/100g) PCB138/(mg/100g) PCB153/(mg/100g)	≤2.0 (calculated as the total value of PCB28, PCB52, PCB101, PCB118, PCB138, PCB153, PCB180) ≤0.5 ≤0.5		
Oxytetracycline/(ug/kg)	≤100 (farmed fish)		
Sulfa	≤100 (farmed fish)		
Florfenicol	≤1000 (farmed fish)		
Note: Other pesticides and veterinary drugs should be compliant with the national regulations.			

4. Inspection Methods

4.1 Sensory Inspection

4.1.1 Regular Inspection

Place the samples on white Petri dish or stainless steel workbench in the environment with adequate light and no peculiar odor to carry out the sensory inspection. Inspect according to 3.1; Place nose near the cut or torn part of the fish body when inspecting odor.

4.1.2 Cooking Inspection

Remove the internal organs of the fish and wash it. Cut the body into 3cm x 3cm block, weigh 100g fish block for preparation; add 500ml drinking water into the container, boil the water and put fish block into container and cover it. Remove the lid after 5 min, smell and taste the block.

4.2 Sample Preparation

4.2.1 When the length of fish body is less than 15cm, take 5th to 10th tail part, wash it and cut the head off, remove the scale, tail, fins, and internal organs. Crosscutting the fish on the top of the back and two sides of abdominal and get the whole fish meat and skin.

4.2.2 When the length of fish body is more than 15cm, take 3rd tail part, wash it, remove the scale and internal organs. Take 3 cross-sectional cut fish meat of 2.5cm thickness from the fish (one behind the fin, one between the fin and anus, another one behind the anus), boned.

4.2.3 Mix the fish according to 4.2.1 or 4.2.2 for preparation. If the inspection could not be carried out immediately, the sample could be stored in the refrigerator of below -18°C

4.3 Safety Indicator

Take sample according to 4.2 and inspect as follows,

4.3.1 TVB-N

Should comply with the requirements of SC/T 3032

4.3.2 Histamine

Should comply with the requirements of 4.4 in GB/T 5009.45-2003

4.3.3 Inorganic arsenic

Should comply with the requirements of GB/T 5009.11

4.3.4 Methyl mercury

Should comply with the requirements of GB/T 5009.17

4.3.5 Lead

Should comply with the requirements of GB/T 5009.12

4.3.6 Cadmium

Should comply with the requirements of GB/T 5009.15

4.3.7 PCBs

Should comply with the requirements of GB/T 5009.190

4.3.8 Oxytetracycline

Should comply with the requirements of SC/T 3015

4.3.9 Sulfa (total)

Should comply with the requirements of Agriculture Department No. 958 bulletin 12-2007 inspection of sulfa drugs residues in aquatic products- Liquid chromatography

4.3.10 Florfenicol

Should comply with the requirements of Agriculture Department No. 958 bulletin 12-2007 inspection of chloramphenicol, thiamphenicol, florfenicol residues in aquatic products- Liquid chromatography- Gas chromatography

5. Inspection Requirements

5.1 Batching Requirements and Sampling Methods

5.1.1 Batching Requirements

Fishes of the same origin and size belongs to the same batch

5.1.2 Sampling methods

Should comply with the requirements of SC/T 3016-2004

5.2 Judging Requirements

5.2.1 All items in sensory inspection should meet the regulation of 3.1, the judgment result should be carried out in accordance to SC/T 3016-2004

5.2.2 If there is one indicator that do not meet the standard, then the whole batch of products are not qualified.

6. Label, Package, Transportation and Storage

6.1 Label

The products should have labels which contains the name of fresh marine fish, class, quantity, place of origin (fishing sea district or farm name) and production date (fishing date)

6.2 Packaging

Fresh marine fish should be stored in firm, clean, non-poisonous, washable fish box or heat preserved box

without peculiar odor, a layer of ice should be placed in between two layers of fish when packing, and a final layer of ice should cover on the top to keep the temperature of 0~4°C

6.3 Transportations

Conveyance should be clean, non-poisonous without peculiar odor, the fish should keep 0~4°C when being transported, and should avoid sunshine, pests, harmful substances pollution and other damages.

6.4 Storage

The fish should be kept in clean warehouse 0~4°C, and should avoid sunshine, insect pest, harmful substances pollution and other damages, the fish should be stored of 0~4°C

National Standards of People's Republic of China

GB/T 18109-2011

Quick Frozen Finfish

Issued on: 2011-12-30 Implemented on: 2012-04-01

Issued by General Administration of Qualify Supervision, Inspection and Quarantine of the People's Republic of China & Standardization Administration of China

Foreword

This standard is drafted according to the rules stated in GB/T 1.1 – 2009

This standard made amendments to GB/T 18109-2000 <Frozen Marine Fish>.

As compared to the earlier relevant version with GB/T 18109 -2000, the key changes are as follows:

- More terms and definitions added
- Remove the grading system for sensory inspection
- Included index of water content in fish.
- The safety index is referenced from the health standards and relevant regulations in China

This standard is rewritten and modified based on CODEX STAN 36-1981,Rev, 1-1995 <Frozen Fish (eviscerated or un-eviscerated)> (Codex standard for quick frozen finfish, un-eviscerated and eviscerated) to achieve consistency. For structural differences between current standards and CODEX STAN 36-1981, Rev, 1-1995, refer to appendix A. For technology differences, refer to appendix B.

This standard is proposed by the Ministry of Agriculture.

This standard is centralized by Aquatic Products Processing Technology Committee of The National Aquatic Product Standardization Technical Committee (SAC/TC 156/SC 3).

This standard is drafted by the following units: Yellow Sea Fisheries Research Institute Chinese Academy of Fishery Sciences, National Quality Supervision and Inspection Center of Aquatic Products.

This standards are mainly drafted by Lianzhu Wang, Xiaochuan Li, Yuxiu zhai, Shiyong Lu, Yuanhui Chen, Jianhua Sun.

This standard is first issued in May 2000.This is the first amendment.

Quick Frozen Fish

1. Scope

This standard specifies requirements for products falling under frozen finfish. This includes the experimental method, inspection guidelines, labels, package, transportation and storage.

This standard is applicable to frozen finfish products that are suitable for human consumption and frozen finfish with or without the removal of head and intestines.

2. Normative References

The normative documents referenced below are indispensable to the application of this standard. For dated references, only the edition bearing such date applies to this standard. For undated references, the latest edition of the normative document (including all amendments) is applicable to this standard.

GB 2733 *Fresh, Frozen Animal Aquatic Products Hygienic Standard*

GB 2760 *Hygienic Standards of Using Food Additives*

GB 3097 *Sea Water Quality Standard*

GB 5009.3 *Food Security National Standards Determination of Moisture In Foods*

GB 5749 *Hygiene standards for drinking water*

GB 7718 *General Principles of Pre-packaged Food labels*

JJF 1070 *Inspection Rule of Quantitative Packaging Goods Net Content Measurement*

SC/T 3016-2004 *Sampling Method of Aquatic Products*

3. Terms and Definitions

The following terms and definitions are applicable to this document.

3.1 Deep dehydration

When the surface area of the sample has lost at least 10% of the moisture, the fish will appear to be abnormally white or yellow in color. This abnormal white or yellow color will conceal the color of the muscle and it can also be found beneath the surface of the skin. If the fish is being scratched, it will leave a significant scar on its exterior.

3.2 Foreign matter

Any distinguished object that does not belong to the fish sample excluding the packaging. Even if the foreign matter found does not cause harm to the human body, it will still be considered as not being able to fulfill the standard operating specification and health standards.

3.3 Odor

Clear, long-lasting, awful smell or special flavor caused by decomposition, rancidity or bait.

3.4 Flesh abnormalities

Indications of flesh abnormalities include paste-like substance in meat and separation between the bones and the meat. For fish products that have their internal organs intact, indications of decomposition includes a broken belly. Other abnormalities include having too much gel substances in the fish with moisture content of more than 86% and samples with paste-like substances that makes up 5% of its total weight due to parasite infection.

4. Requirements

4.1 Processing Requirement

4.1.1 After proper preprocessing, products should be frozen under conditions as stated below:

a) Freezing should be done in proper facility and ensure the products quickly pass the coldest region

b) Processing is completed only when the product's temperature stabilized at below -18 degree celsius

c) In order to ensure quality, the products should be kept in frozen state during the process of transportation, storage and selling.

4.1.2 A series of measures should be undertaken in the course of processing and packing to prevent dehydration and oxidation in the storage process which will influence the quality.

4.1.3 In ensuring the quality of the product, refreezing and repacking is allowed under approved operations and regulations.

4.1.4 The intake of raw material and processing operation should conform to the operation specification.

4.2 Requirements for Raw Materials

4.2.1 Fish

The raw material should be fresh, edible, of good quality, and conform to the standards of GB 2733.

4.2.2 Water

Processing or ice glazing water should use either drinking water or clean seawater. Drinking water should conform to the requirements of GB 5749 while clean seawater should conform to the requirements of GB 3097.

4.2.3 Other ingredients

Other ingredients in use should be of an acceptable quality for food and conform to corresponding rules and relevant stipulations.

4.3 Food additives

Varieties and quantity of the food additives used in the processing should conform to the requirements of GB 2760.

4.4 Sensory requirement

4.4.1 Sensory requirement for frozen products

4.4.1.1 IQF product: Glazes should be transparent and bright. The glaze should be able to cover the fish body while keeping its original shape. Frozen products should be able to be separated easily without any signs of dehydration or melting.

4.4.1.2 BQF products: Frozen pieces should be clean, solid, smooth, completed and aligned. Minor indentations on the surface of the frozen products are acceptable.

4.4.2 Thawed sensory requirement

Refer to Table 1 for the sensory requirements of thawed fish

Table 1: Thawed fish body sensory requirement

Items	Requirements
Appearance	Uneviscerated fish: fish body complete, no signs of damaged stomach Eviscerated fish: Complete removal of internal organs Fish: Complete removal of internal organs, same size, reasonable matching of parts
Color	Possess natural color and pattern, no dehydration, no color changes, scales against body
Taste and flavor	Surface and gill filament have its original smell, no strange smell
Muscle	Muscle structure tense and Flexible with no abnormalities
Impurity	No impurities

4.5 Physical index

Refer to table 2 for physical index guidelines.

Table 2: physical index

Items	Index
Core temperature/℃ ≦	-18
Moisture content /% ≦	86

4.6 Health index

Health index should conform to GB 2733 guidelines.

4.7 Residue of veterinary drug

The residue of veterinary drug index and limitation should conform to relevant standards.

4.8 Net content

The net content of the pre-packing products should conform to the guidelines in JJF 1070.

5. Inspection methods

5.1 Sensory analysis

Under the conditions of natural light and the absence of any peculiar smell, place the samples on the white porcelain cup or stainless steel workbench and inspect with requirements stated in 4.4.

Remove the surface layer through the use of knife or sharp tools and inspect for the state of dehydration. The state of dehydration can be determined through measuring the overall percentage of influenced area.

Inspect for any foreign matters while thawing.

Inspect and evaluate the smell of the fish by splitting or slitting the back of the neck

If it is still difficult to pass a judgment after thawing the raw fish, take a sample (approximately 200g) to cook. The inspection of smell and taste of the cooked fish should be in accordance to requirements stated in 5.2

5.2 Cooking experiment

Cook the fish till it reaches a temperature of 65℃- 70℃ but refrain from overcook it. The time taken for cooking the fish is subjected to the temperature at which the sample is being taken and the size of the sample. The exact time and condition for cooking the sample should be determined by previous experiments. Choose any one of the following methods for the experiment.

a) Bake: Wrap the product with a foil and place it evenly across a flat pan or shallow pan.

b) Steam: Wrap the product with a foil and place the sample on the metal rack in the container with boiled water before putting on the cover.

c) Boil in bag: Put the product in the boilable bag film, seal it before dipping it into the boiling water.

d) Microwave: Place the sample in a heat-resistant container. If a plastic bag is being used, ensure that there is no peculiar smell from heating the plastic bag. Follow the instructions in the instruction manual for heating.

5.3 Internal temperature of the frozen products

Use a drill to drill into the geometric center, remove the drill and measure the temperature with a thermometer. For IQF products, measure the temperature of the geometric center of the smallest package.

5.4 Test for moisture

5.4.1 Thaw: Place the product in the boilable bag film, dip it into water at room temperature (not high to 35℃), Pinch the bag to feel if there is any blocks or ice crystal but beware of damaging the fish

5.4.2 Sample: Take a sample of at least three fishes. After cleaning and removing the head, bones, intestines, muscle and other edible parts, mix well for future use.

5.4.3 Test: Take the mixture from above-mentioned procedures and implement the test according to GB5009.3.

5.5 Health Index

Follow the testing methods of GB 2733 rules.

5.6 Residue of veterinary drug

The inspection method of residue of veterinary drug should conform to the relevant standards.

5.7 Net Content

The inspection of the net content deviation should conform to the guidelines of JJF 1070.

6. Inspection rules

6.1 Group rules and Sampling methods

6.1.1 Group rules

Under the same general environmental conditions and raw material, products produced on the same day can be classified to be in the same group. A sample can then be taken from the batch.

6.1.2 Sampling Method

6.1.2.1 The method of taking samples by batch number should be in compliant with SC/T 3016-2004. Sample unit should be primary package. A sample of IQF products unit is 1kg.

6.1.2.2 For products that require net-weight testing, the sampling plan should conform to appendix A of SC/T 3016-2004.

6.2 Inspection and Classification

6.2.1 Products inspections

Type of inspection: Factory inspection and type inspection.
6.2.2 Factory inspection

Every batch of product should undergo inspection before dispatching. This factory inspection should be executed by the quality inspection department. Inspection items include: sensory analysis, net content deviation, internal temperature of frozen product, microorganism indicator. After passing the inspection, a certification will be given for products to be stored or dispatched.

6.2.3 Types inspection

Type inspection should be done in the following cases. The inspection items include all guidelines stated in this standard.

a) Recommence production after a long break

b) Changes in raw material or core manufacturing technique that may influence the quality of the product

c) Changes in the source or growing environment of the raw material

d) Type examination is proposed by the state administration of quality supervision institutions.

e) Significant differences found between previous factory inspection and the type examination.

f) Periodic inspection of at least once a year during normal operations

6.3 Evaluation guidelines

6.3.1 All items for sensory inspection of the frozen fish follows guidelines stated in 4.4. Certified goods should satisfy the guidelines stated in table A1 of SC/T 3016 -2004.

6.3.2 The average net weight of all the samples cannot be less than the stated weight. There should not be an significant difference in the stated weight in any packet.

6.3.3 The product is certified when it passes all inspections.

6.3.4 If the products fail two or more criteria, it will be disqualified.

6.3.5 If the product fails one criteria, a re-inspection can be carried out. However, it will be disqualified if the product consistently fails the criteria after re-inspection.

7. Label, package, transportation, storage

7.1 Label

7.1.1 Pre-package product label

Pre-packing product label should conform to the guidelines stated in GB 7718 and the following criterion

Aside from labeling the conventional name for the fishes, labels for eviscerated fish should also demarcate whether the head of the fish has been removed

Labels should include the whether the fish is farmed or caught and the origin of the product

Labels should state if the product is glazed by seawater

The label should state the appropriate temperature to store or transport the product in order to ensure the quality of the product. For instance, label should state if the product should be kept at a temperature of -18℃ or lower for storage or the temperature should be kept at -8℃or lower in the process of transportation and sales.

7.1.2 Label for no-retail packing.

Labels should include product name, batch number, producing or packing factory, address and storage condition .The batch number, producing or packing factory and address can be represented by an approved symbol. This approved symbol must be clearly stated in the supporting documents.

7.2 Packing

7.2.1 Packing material

The plastic bags, cartons, corrugated cartons and other materials should be clean, non-toxic ,odorless and stable.

7.2.2 Packing requirements

Put a small amount of bags into a big bag (or box), then put into the carton. The products should be placed neatly in the box together with a certification of the product qualification. Lastly, secure the box with glue and binder at the bottom and a packing tape or belt at the top.

7.3 Transportation

7.3.1 Transport must be equip with tools to maintain the temperature of the fish at -15℃

7.3.2 Transportation tools should be clean, hygienic, odorless, kept away from the sunlight, pests and pollution from harmful substances. Also, it should not come into contact with corrosive material and is prohibited from transporting with the materials that have a strong smell.

7.4 Storage

7.4.1The storehouse temperature should be lower than - 20 ℃with minimal fluctuation of ±2 ℃.Frozen fish should be stored separately based on the different species, chasses and batches. Each storage space must be demarcated. The base plate should be kept at least 10cm from the ground and at least 30cm from the walls. Stacking of the cartons are allowed as long as the pressure from stacking the carton does not distort the shape of the carton.

7.4.2Products storage room should be clean, hygienic, odorless, kept away from the sunlight, pests, pollution from harmful substances' and other contamination.

Appendix A

(Informative annex)

Structural differences between this standard and CODEX STAN 36-1981, Rev. 1-1995

There are several structural differences between this standards and CODEX STAN 36-1981, Rev. 1-1995. Refer to table 1 for the respective changes.

Table 1: Difference between this standards and CODEX STAN 36-1981, Rev. 1-1995

Article chapter no.	Corresponding sections in national standards
1	1, 2.1
2	-
3	8
4.1.1, 4.1.2, 4.1.3	2.2
4.1.4	5.3
4.2.1	3.1, 3.4
4.2.2	3.2
4.2.3	3.3
4.3	4
4.4	5.1, 8
4.5	-
4.6, 4.7	5.1, 5.2
4.8	6.2
5.1	7.2, appendix A
5.2	7.6
5.3	-
5.4	7.4
5.5, 5.6	7.2
5.7	7.3, appendix A
6.1	7.1
6.2	-
6.3	3.5, 5.2, 9
7.1	2.3.2, 6
7.2	2.2 third paragraph
7.3	2.2 first paragraph
7.4	6.3

Appendix B (Informative Annex)

Technical differences between this standard and CODEX STAN 36” 1981, Rev. 1-1995 and its reason

Refer to table B.1 for the technical differences between this standard and CODEX STAN 36” 1981, Rev. 1-1995 and its corresponding reason.

Table B.1: Technical differences between this standard and CODEX STAN 36” 1981,Rev. 1-1995 and the corresponding reason

Article chapter NO.	Technical differences	Reason
All	The order of this standard’s technical content and article chapter NO. is different from CODEX STAN 36-1981, Rev. 1-1995	With the pre-condition that the main technical content of this standard is similar to CODEX STAN 36-1981, Rev. 1-1995. The order of this standard’s technical content and article chapter NO. is in accordance to the relevant standards of GB/T 1. 1-2009.On the basis of technical content unchanged, the article construction is conformed to national standard writing requirement.
2	Quoting from national standard	Refer to the standards of GB/T 1. 1 2009. This chapter is added to promote convenience and increase its usage
3	Changed the standard regarding imperfections in the eighth chapter of CODEX STAN 36-1981, Rev. 1-1995 to terms and definition	On the basis that the technical content remains unchanged, the article construction is in accordance to the national standard writing requirement.
4. 1. 4	Changed Section 5.3 of CODEX STAN 36-1981, Rev. 1- 1995 from operation technology, into “ Acceptance of raw materials and processing procedures should be in accordance to the standards of operation technology.”	CAC is modifying the operation technology standards quoted in this standard to operation technology rules of aquaculture and aquatic products. This change will be issued soon. This standard can be adjusted to the fit modified standards.
4. 2. 2	Changed the naming of the standard for drinking water that is in accordance to the latest guideline from WHO (International drinking water quality standards) to GB 5749	Quoted WHO standards incorporated into national standard to aid in the execution and operation of the standard.
4. 4	Add sensory requirement for frozen products.	Refer to China’s current standard. This is done to promote its usage in the nation.
4. 5 4. 6	Added requirement for physical index and safety index.	Technical content is compliant with the standards of CODEX STAN 36-1981, Rev. l-1995 and it is formatted in accordance with the guidelines for national standard writing.
5. 3	Add testing methods of frozen products core temperature.	Strengthen practicality of the standard.
5. 4, 5. 7	Add testing methods of corresponding technical index.	The regulation is changed according to the structure of the national standard to achieve the goal of promoting convenience for operations and inspection.
6. 1	The sampling method of this standard is similar to that of aquatic products in SC/T 3016-2004	Due to the similarity of the chapters between SC/T 3016-2004 and CODEX STAN 233-1969 about prepackage food sampling, similar sampling methods were used
6. 2	Add inspection classification	On the basis that the technical content remains unchanged, the structure of this standard is in accordance with the national standard writing requirement.
7. 2 7. 4	Refine and added requirement for package, transportation and storage.	Made reference to the standards in CODEX STAN 36-1981, Rev. l-1995 about package, transportation and storage. Refinement was also made in accordance with the relevant national requirement in a bid to strengthen the practicality of the standard.

National Standards of People's Republic of China

GB/T 19162-2011

Redlip Mullet

Issued on: 2011-06-16 Implemented on: 2011-11-01

Issued by General Administration of Qualify Supervision, Inspection and Quarantine of the People's Republic of China & Standardization Administration of China

Foreword

This standard Replace GB 19162-2003< Red-lip Mullet >

This standard's main amendments compared with GB 19162-2003 are as follows:

- Modify the scientific name and English name of the red lip mullet ;
- Modify and add normative and quoted documents;
- Delete chapter 6.2.2;
- Add chapter 7.1 "testing rules" z;
- Add chapter 7.2 "sampling methods" ;
- Modify chapter 7.6"chromosome testing" ,directly quote GB/T 18654. 12;
- Modify chapter 7.7"biochemical genetic analysis " ,directly state detailed operation methods F.
- Add the evaluation rules.
- Delete A2 of the original standard, add appendix B;
- Add the index of water content in fish.

The appendix B of this standard is normative documents, appendix A is quoted documents.

This standard is forwarded by the Ministry of Agriculture

This standard is centralized by Aquatic Products Processing Technology Committee of the National Aquatic Product Standardization Technical Committee (SAC/TC 156/SC 3).

This standard is drafted by Tianjin Institution of Aquaculture Research.

This standard's main draftsmen are: Xuyun Gen,Xiangpu Li, Kefeng Liu , Xuehui Wang, Weiling Ma.

Redlip Mullet

1. Scope

This standard makes rule about main structure characteristics, growth, breeding, genetic characteristics and testing methods of the red-lip mullet Liza haematocheila (Temminck et Schkegel).

This Standard applies to the plasm test and identification of the red-lip mullets.

2. Normative References

The normative documents referenced in the text are indispensable to the application of this standard. For dated references, only the edition bearing such date applies to this standard. For undated references, the latest edition of the normative document referred to (including all the amendments) applies.

GB/T 17826 Marine bio-taxonomic codes

GB/T 18654.1 The first part of the farmed fish plasm test z: testing methods

GB/T 18654.2 The second part of the farmed fish plasm test z: sampling methods

GB/T 18654.3 The third part of the farmed fish plasm test: determination of character

GB/T 18654.12 The twelfth part of the farmed fish plasm test: karyotype analysis

3. Terms and Definitions

3.1 Scientific name

Red-lip mullet Liza haematocheila (Temminck et Schkegel), see GB/T 17826.

3.2 Classification position

Mugiliformes ,Mugilidae ,Liza

4. Main structure characteristics

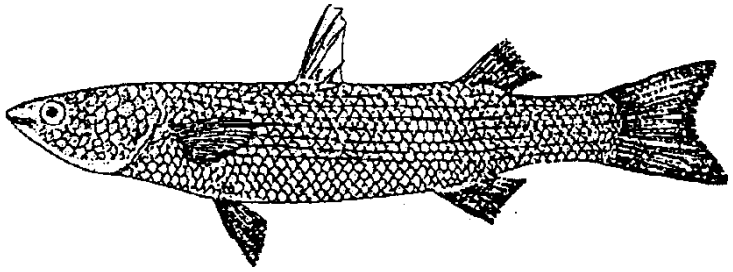
4.1 External main structure characteristics

4.1.1 Appearance

Its body is long ,thin,prismatic,backward gradually flat,down the mouth appears like “人”.Two debt teeth is small,villiform-like.The maxillary bone bends down suddenly after the mouth corner ,the trailing end out.Eyes are small ,red with eyelid underdeveloped .There are two separated back eel,no axillary scales on the base of chest eel.It’s covered by slight persimmon scales ,cycloid scale on its head,no side track.carp thick or thin,long ,densely rowed. The tail eel concaves.Head and body back looks steel grey,body side looks light yellow ,belly white.

The external appearance sees capture1:

Capture 1



4.1.2 Countable characters

4. 1. 2. 1 Back eel type： D. N, avoid.

4. 1. 2. 2 Chest eel type： P.16 170

4. 1. 2. 3 Belly eel type： v.I-50

4. 1. 2. 4 Buttocks eel type： A. III-8 9

4. 1. 2. 5 Vertical scale number： 36 440

4. 1. 2. 6 Row scale number： 12 140

4. 1. 2. 7 The first outside bow number:26 60+50 76.

4.1.3 Measurable characters

Take 980 individual samples tail body lengthen from 6. 7cm-71. 0 cm, weight from 34 g-5 330g, measurable characters percentage sees table1.

Table 1 Measurable characters percentage

Whole length /body length	body length/ height length	body length/ head length	body length/lip length	body length/eye length	body length/ interorbital distance	body length/caudal peduncle length	caudal peduncle length/caudal peduncle height
1. 186± 0.083	15.031 ± 0.651	14.211± 0.245	14.593 ±0.495	15.707 ± 0.857	12.133±0.199	15.430± 0.405	11.947 ± 0.202

4.2 Inner structure characteristics

4.2.1 Swim bladder

Swim bladder has one room, turn off at the front end, two side spine bulges.

4.2.2 Backbone

The total number of backbones: 240, the second bone joint extend forward like spine.

4.2.3 Peritoneum

Ash black

4. 2. 4 pyloric caecus

5-7 (usually 6)

4. 2. 5 the digestive tract

The digestive tract the esophagus is short,like a “v”,stomach wall muscle is developed , the tract is quite long.

4. 2. 6 Sexual glands

Sexual gland is on the back of body cavity ,down the bladder.

5. Growth and breeding

5.1 Growth

The measured length and weight of red-lip mullets of different age see s chart 2.In Correspondence of chart 2,the formula of the body length ,average returned value ,growth equation ,weight of different age groups refer to appendix A.

Table 2 the measured length and weight of red-lip mullets of different age

Age /aged		2	3	4	5	6	7
♂	measured length/cm	17.3-35.2	25.2-47.5	36.0-53.5	42.9-66.5	58.3-67.0	61. 0-74.0
	measured weight/g	86-750	250-1815	510-2665	1205-4045	2200-4305	3745-4590
♀	measured length/cm	23.4-40.4	29.2-47. 6	31.1-52.1	44.2-69.6	56.4-64. 5	57.6-71.0
	measured weight/g	191-979	417-2075	634-2705	1440-3680	2995-4700	2035-5330
Ps:The one-aged red-lip mullet can’t not be distinguished male or female.The measured length is 9.6cm-25.3 cm,The measured weight is 26g-260g.							

5.2 Breeding

5. 2. 1 Sexual maturity age

Male red-lip mullet: 3-4, female red-lip mullet: 2-3.

5. 2. 2 Breeding times

Sexual matured individual ripes one time a year and spawn at one time.

5. 2. 3 Breeding numbers

Individual breeding numbers of different age group refer to chart 3.

Table 3 Individual breeding numbers of different age group

Age /aged	3	4	5	6	7
weight / g	1069±169. 6	149±695.0	2596 ± 677. 7	3682± 905.3	2945 ± 1 131. 4
absolute breeding numbers / pellet	(5.5± 1. 1) ×105	(7.5± 1. 5) ×10s	03. 7± 3. 2) ×10s	03. 0± 2.2) ×105	(7. 5± 1. 9) ×105
relative breeding numbers / (pellet / g)	568± 194. 7	555± 166.4	745± 14.85	411± 153.9	260 ± 31. 9

6. Genetics character

6.1 Cell genetics character

6.1.1 Number of chromosome

Chromosome of body cell diploid number, 2n=48a

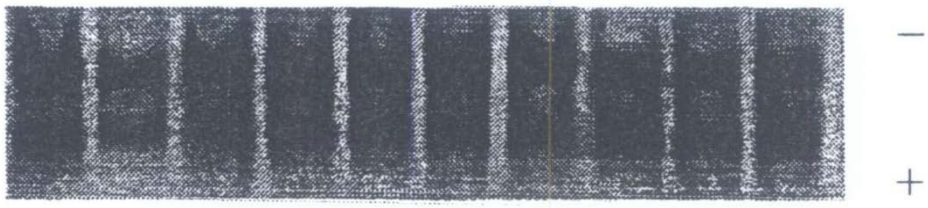
6.1.2 Chromosome idiogram

Central submetacentric chromosome (group m) 13pair, second central submetacentric chromosome (group sm) 5 pair,second front end submetacentric chromosome (group st) 6 pair.chromosome arm number (NF)84(referring to chart 2).Karyotype equation: 2n=26 m+10sm+12st.

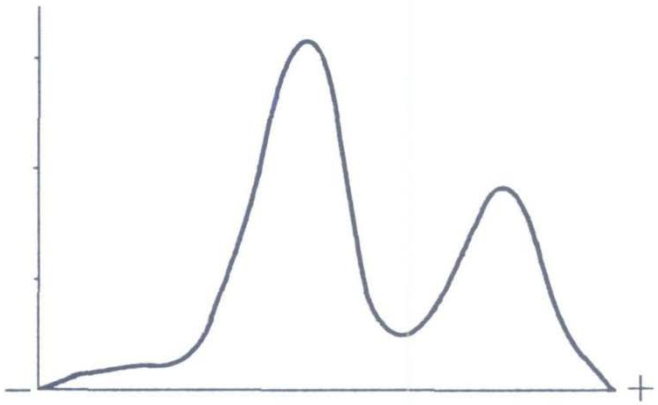
Capture 2: red-lip mullet chromosome idiogram

6.2 Biochemical genetics character

The lactate dehydrogenase (LDH) isozyme zymogram in the liver tissue refers to caputure 3a, the scanned isozyme zymogram of The lactate dehydrogenase (LDH) in the liver tissue refers to capture 4a.



Capture 3 the lactate dehydrogenase （ LDH ）isozyme zymogram in the liver tissue



Capture 4 the scanned isozyme zymogram of The lactate dehydrogenase (LDH) in the liver tissue

7. Testing methods

7.1 Testing rules

Conform to rules of GB/T 18654. 1

7.2 Sampling method

Conform to rules of GB/T 18654. 2

7.3 Character definition

Conform to rules of GB/T 18654. 3

7.4 Age definition

7. 4. 1 Scale- took part: the base of the side back eel and up of the rowed scale

7. 4. 2 Operation step:

a) Take the scale down by hammer, keep it in the bag;

b) Take the scale out, put it into the culture dish, clean it up;

c) Put the clean scale clipped in the two pieces of glass according to its original place in the fish body. Paste label on it, seal it with glue on two sides.

d) Observe its growth ring by microscope or projector to ensure the age.

7.4.3 Growth ring character: density interaction, carve or form gap band.

7.4.4 Regenerated scale can't use to make age definition.

7.5 Breeding capacity testing

In the breeding season, make vivisection to the sexual matured parent fish before spawning, use electronic balance to weigh up its weight, net weight and its sexual gland (accurate to 0. 01 g), at the same time, weigh two ovum of 1.00g, count ovum number separately under the microscope, make out its average number. The entire ovum in the ovary is called absolute breeding numbers; the number of each weight unit is called relative breeding numbers.

7.6 Chromosome testing

Conform to rules of GB/T 18654.12

7.7 Biochemical genetic analysis

7. 7. 1 Sampling collection and preparation

Vivisect red-lip mullet and take the liver out ,seal and store in -20℃Take 0.3g organ before catachresis, put it into the glass homogenizer container, wash it with prepared cold water three times. Add 900 μL prepared cold water in proportion of 1:3,ice bath homogenate. Homogenizer liquid should be kept in the ice container in 4℃for 30 minutes, centrifuge with the speed of 13 500 r/min, take the clear liquid. Add Ctris-HCl cushion fluid, (0.01 mol/L, pH7.0), mix it equally, centrifuge. Take the clear liquid for cataphoresis.

7. 7. 2 Make glue

The glue used in cataphoresis will be poured into the gap of two glasses. The glass edge near the glue should be covered by vaseline to ensure be sealed, tie it up after being put in the cataphoresis tank. First pour separation gel, wait for its polymerization, if necessary it can put in the 4℃ice container for night, the next morning pour the spacer gel. Gel formula refers to appendix B.

7.7.3 Cataphoresis

Electrode buffer is three porcelain anhui - glycine methyl amino armor (Tris-Gly) liquid. Cataphoresis should be kept in stable voltage in 4℃ice container, pre-cataphoresis in 78v for 30minutes, cataphoresis in 150v for 3 hours.

7. 7. 4 Dyeing

Dyeing should be done in thermostat of 37℃, dyeing liquid should be temporarily made. Dyeing liquid formula refers to appendix B.

7.7.5 Record and analysis

Take photos, record and analysis in use of gel-imaging system.

8. Results Definition

Conform to rules of GB/T 18654.1

Appendix A

(Quoted Appendix)

The formula of the body length, average returned value, growth equation, and weight of different age groups

A. 1 Returned value of length and weight

In Correspondence of chart 2, the average returned value of length and weight of different age groups refers to chart A.1.

Chart A.1

age /aged		0+	1+	2+	3+	4+	5+	5+	7+
♂	Returned value of length /cm	7.8	13.9	22.5	31.1	40.3	48.6	59.1	63.5
	Returned value of weight /g	8.9	52.4	199.8	511.5	1033.4	1 653.7	2784.1	3671.1
♀	Returned value of length /cm	7.8	13.6	22.3	32.1	40.1	49.0	58.1	63.0
	Returned value of weight /g	8.9	49.5	193.2	566.5	1013.3	1 755.1	2978. 9	3498.4

A.2 the formula of the body length and weight

$$W = 0.02709 \times Lz.ss1\ s \text{ ----------(A.1)}$$

In the formula,

W is weight, unit is gram (g)

0. 02709--coefficient;

L is length; unit is centimeter (cm)

Appendix B

(Normative Document)

The lactate dehydrogenase (LDH) liquid making, gel formula and dyeing liquid formula

B. 1Liquid making

B. 1. 1 Monomer liquid

Acrylamide 29.1g, N',N-methylene diacrylamide 0.9g, mix with water, dilute to the volume of 100 mL, and keep in brown bottle under 4℃

B. 1. 2

Trihytdroxy methyl-aminomethane 9.08 g, dissolve in ~40 mL water. Use hydrochloric acid to turn to PH to 8.9, dilute to the volume of 50 mL, and keep in 4℃condition ready for use.

B. 1. 3 Spacer gel buffer

Tris 3.03 g, dissolve in ~40 mL water, use HCl to turn to PH to 6.8, dilute to the volume of 50 mL, and keep in 4℃condition ready for use.

B. 1. 4 10% ammonium persulfate

Ammonium persulfate 0.1g, dissolve in ~1 mL water, and keep in 4℃condition ready for use.

B. 1. 5 10% tetramethylethylenediamine

Tetramethylethylenediamine 100 μL, add water about 900 μ.L, and keep in 4℃condition ready for use.

B. 1.6 Loading buffer

Spacer gel liquid 2 mL ,add in 1mL87% glycerinum,0.1 mg bromophenol blue, dilute to the volume of 10 mL, and keep in 4 ℃condition after sub package.

B. 1. 7 Electrode buffer

Weigh and take 3. 03 g Tris and 14.41g CGly, dissolve in 800 mL H_2O , use HCl to turn to PH to 8.3, dilute to the volume of 1 L, and keep in 4℃condition ready for use.

B.1.8 0.1 mol/L uranic chloride

5. 85 g uranic chloride（NaCl), dissolve in water, dilute to the volume of 1L, and keep in 4℃condition ready for use.

B. 1.91 mol/L lactic acid uranium

11.206 g lactic acid uranium, dissolve in water, dilute to the volume of 100 ML, and keep in 4℃condition ready for use.

B.2 Gel formula

Refer to chart B.1.

Table B.1 Gel formula

Items	Separation gel (T=7.5%)	Spacer gel（T=4%)
Monomer liquid	3.7 mL	650μL
Electrode buffer	300 μL	100 μL
Water	11 mL	4. 25 mL
10% ammonium persulfate	75 μL	37. 5μL
10%	75 μL	37. 5μL

B.3 dyeing liquid formula

Refer to chart B.2.

Table B.2 dyeing liquid formula

Reagent	Concentration	Dosage
Coenzyme I (NAD)		25 mg
Four azole nitrogen salt chloride nitro CNBT)		15 mg
Phenazine methyl sulfate vinegar（PMS)		5. 25 mg
Chlorinated pin（NaCl)	0. 1 mol/L	2.6 mL
Lactic acid pin	1 mol/L	5 mL
Water (H2O)		50 mL

National Standards of People's Republic of China

GB/T 21290-2007

Quick Frozen Tilapia Fillets

Issued on: 2007-12-27 Implemented on: 2008-03-01

Issued by General Administration of Qualify Supervision, Inspection and Quarantine of the People's Republic of China & Standardization Administration of China

Foreword

This standard is proposed by the People's Republic of China Ministry of Agriculture.

This standard is centralized by The National Aquatic Product Standardization Technical Committee.

This standard is drafted by Science South China Sea Fisheries Research Institute, Chinese Academy of Fishery.

This standard's main draftsmen are: Laihao Li, Xianqing Yang, Shiqiang Diao , Shuxian Hao ,Yanyan Wu, Wanjun Zhou,Hong Shi.

Quick Frozen Tilapia Fillets

1. Scope

This standard specifies requirements for product classification, inspection method, labels, package, transportation and storage of quick frozen tilapia fillets.

This Standard is applicable to using Tilapia mossambica Peters as main ingredient, subdivided, freezing processed, non-fresh frozen tilapia fillets.

2. Normative References

The normative documents that have been referenced in this text are essential to the interpretation and application of this standard. For dated references, only the edition bearing the stipulated date is applicable to this standard. For undated references, the latest edition of the normative document (including all its amendments) will apply.

GB 2760	*Hygienic Standards for Uses of Food Additives*
GB/T 4789. 2	*Microbiological Examination of Food Hygiene - Aerobic Plate Count*
GB/T 4789. 3	*Microbiological Examination of Food Hygiene - Enumeration of Coliforms*
GB/T 4789. 4	*Microbiological Examination of Food Hygiene - Examination of Salmonella*
GB/T 4789. 10	*Microbiological Examination of Food Hygiene - Detection of Staphylococcus aureus*
GB/T 5009. 11	*Determination of Total Arsenic and Abio-Arsenic in Food*
GB/T 5009. 12	*Determination of Lead in Foods*
GB/T 5009. 15	*Determination of Cadmium in Food*
GB/T 5009. 17	*Determination of Total Organic-mercury and mercury in Food*
GB/T 5009. 87	*Determination of Phosphorus in Food*
GB 5749	*Standards for Drinking Water Quality*
GB 7718	*General Standard for the Labeling of Prepackaged Foods*
SC/T 3009	*Standards for Aquatic Products Prossessing and Quality Management*
SC/T 3015	*Determination of Aquatic Oxytetracycline, tetracycline, Chlortetracycline Residues*
SC/T 3016-2004	*Determination of Aquatic Products Sampling Method*
SC/T 3017	*Determination of Frozen Aquatic Products Net Content Test*

3. Requirements

3.1 Main Ingredients and Auxiliary Materials

3.1.1 Ingredients

The ingredients used should be healthy, pollutant-free and meant for human consumption. Before preprocessing, raw fish should be soaked in the freshwater pool for at least 2 hours.

3.1.2 Auxiliary Materials

Varieties and quantities of the food additives used in the processing should comply with the requirements of GB 2760.

3.2 Processing Requirements

3.2.1 Production staff, environment, workshop and facilities, equipment and cleanliness control procedures should comply with requirements of SC/T 3009 .

3.2.2 Processing water should comply with requirements of GB 5749.

3.2.3 Products should be covered by ice garment (IQF) or be glazed with a layer ice (BQF) or vacuum packed.

3.3 Sensory Requirements

Sensory Requirements should comply with the requirements listed in Table 1.

Table 1: Sensory Requirements

Content		Requirements
Frozen Item		The fish should be covered by glaze or ice, there should be neither visible dehydration nor softening of the fish. Frozen items should be packed individually. Also, usage of air-tight packaging should not be broken.
Thawed	Color	Possesses the color and luster that products supposed to have
	Texture/ Appearance	Frozen solid, has texture/ appearance that products supposed to have
	Odor	No peculiar smell
	Muscle structure	Tense and Flexible
	Impurities	Subcutaneous membrane, small speck and skin, fishbone shorter than 5mm are allowed, no other matters
	Parasite	In 1 kg samples, the cystic larvae, of which diameter more than 3 mm or length more than 10 mm should not more than 2.

3.4 Physicochemical Index

The product physicochemical index should refer to the requirements in Table 2.

Table 2: Physicochemical Index

Content	Index
Core Temperature/℃	≦ -18
Net Content Minus Deviation/ %	≦ 4（≦1000 g) ≦ ± 3 (1000 g – 2500 g) ≦ ± 2 (2500 g – 5000 g) ≦ ±1 (>5000 g)
Phosphate (P205) / (g/kg)	≦ 10

3.5 Health Index

The health index should refer to the requirements in Table 3.

Table 3: Health Index

Content	Index	
Oxytetracycline / (mg/kg)	≦	0. 1
Inorganic Arsenic / (mg/kg)	≦	0. 1
Methyl Mercury / (mg/kg)	≦	0. 5
Plumbum / (mg/kg)	≦	0. 5
Cadmiumtest / (mg/kg)	≦	0. 1
Aerobic Plate Count / (CFU/g)	<	5 ×10^6，at least two in five samples are detected ＜ 5 ×10^5
Coliform Bacteria / (MPN/g)	<	500 at least two in five samples are detected ＜ 11
Staphylococcus Aureus / (CFU/g)	<	100
Sramana Bacterium		Can’t be detected

4. Test Methods

4.1 Sensory Analysis

In a well-lit, odorless and clean environment, place the samples on the white porcelain dish or stainless steel workbench, follow Chart 1 and carry out the test step by step.

4. 1. 1 Frozen Item Appearance Test

Place the samples on the white porcelain dish or stainless steel workbench, follow Chart 1 and carry out the test step by step.

4. 1. 2 Thaw Completely

4. 1. 2. 1 Open the package, place product in the impermeable bag film, seal it, and place it in the thawed container, allowing the water to flow in from the bottom.

4. 1. 2. 2 The water's temperature should not exceed 21℃and the temperature of the thawed fish should be in the range of 0℃– 4℃A slight squeeze could be given to the bag to gauge if it's completely thawed, without breaking the texture of the fish. When there are no ice crystals or blocks, it is thus completely thawed.

4. 1. 3 Thawed Sensory Test

Place the thawed samples resulting from 4.1.2, on the white porcelain dish or stainless steel workbench, test the color, appearance, odor, muscle, impurities, parasite following Chart 1. The parasite test should be carried out under fluorescent lights.

4.2 Physicochemical Index Test

4. 2. 1 Frozen Items Core Temperature Test

Drill into geometric center of the frozen item, remove the drill out and dip the thermometer immediately, read off the temperature only when fluctuations stop.

4.2.2 Net Content Deviation Test

4. 2. 2. 1 Testing Method

Should comply with the requirements of SC/T 3017

4.2.2.2 Net Content Deviation Calculation

Net content deviation should be calculated by formula (1), the unit is %.

$$A = \frac{m_1 - m_0}{m_0} \times 100 \qquad \cdots\cdots(1)$$

In the formula,

A – Net content deviation of sample, unit is %;

m1 – Practical net content of sample, unit is gram (g);

m0 – Marked net content of sample, unit is gram (g).

4.2.3 Phosphate Test

Should comply with the requirements of GB/T 5009. 87, the result is recorded as P2O5.

4.3 Health Index Test

4. 3. 1 Oxytetracycline Test

The test should comply with the requirements of SC/T 3015

4. 3. 2 Inorganic Arsenic Test

After thawing via the instructions under 4. 1. 2, comply with the requirements of GB/T 5009. 11.

4. 3. 3 Methyl Mercury Test

The test should comply with the requirements of GB/T 5009.17

4. 3. 4 Plumbum Test

The test should comply with the requirements of GB/T 5009.12

4. 3. 5 Cadmiumtest Test

The test should comply with the requirements of GB/T 5009.15

4.3.6 Aerobic Plate Count

The test should comply with the requirements of GB/T 4789. 2

4.3. 7 Coliform Bacteria

The test should comply with the requirements of GB/T 4789. 3

4. 3. 8 Staphylococcus Aureus

The test should comply with the requirements of GB/T 4789. 10

4.3.9 Sramana Bacterium

The test should comply with the requirements of GB/T 4789. 4

5. Inspection Requirements

5.1 Group Requirements and Sampling Methods

5.1.1 Group Requirements

Under the raw materials and production conditions, products are classified as a batch should they be produced by the same team and/ or on the same day. Samples are selected by batches.

5.1.2 Sampling Methods

5.1.2.1 Microbiological indicator test sampling method: Select at random, for at least 5 of the smallest packages for microbiological indicator test.

5. 1. 2. 2 Sampling method of other indicator sampling method except for microbiological indicator should comply with the requirements of SC/T 3016-2004.

5.2 Inspection and Classification

Product inspections include factory inspection and type inspection.

5.2.1 Factory Inspection

Each batch should undergo factory inspection. The factory inspection should handled by quality inspection department. Inspection items include: sense, net content deviation, frozen products inner temperature, microbiological indicator and certification of inspection. Products being taken in for storage or thrown away depends on the certification.

5.2.2 Type Inspection

Type inspection should be adopted in any cases below, inspection items are all the ruled items in the standard.

a) Resume production after a long production hiatus;

b) When product quality could be affected by the massive changes of raw materials, processing technology and production conditions;

c) When type inspection is proposed by the State Administration of Quality Supervision institutions;

d) When there is a big difference between previous factory inspection and the type inspection.

e) During normal production period, periodic inspection carried out at least once a year.

5.3 Evaluation Rules

5.3.1 Whether the sensory index and frozen products core temperature is qualified or not, it is determined by appendix A or B of SC/t 3016 -2004.

5.3.2 The average net weight of all the samples should not be lighter than the labeled weight and the net content minus deviation of single package should comply with the requirements of appendix A or B of SC/t 3016 -2004, or it will be disqualified.

5.3.3 If two or more index of the phosphate inspection results does not satisfy the requirements, it is disqualified. If one index is disqualified, double the sample numbers, have a retest, and according to the new results, determine whether the product is qualified.

5.3.4 When one index of the other items' inspection results is disqualified, sampling the re-inspection is allowed. If there are still disqualified items, it will be judged disqualified.

6. Labels, Package, Transport, Storage

6.1 Label, Signs

6.1.1 Sales Package Label

Products label should comply with the requirements of GB 7718. Label content includes: product name, brand, ingredients used, net content, product standard code, producer or sales name, address, date, storage condition, guarantee period. It should also be indicated on the label that the tilapia fillets are boneless.

6. 1. 2 Labels on Transportation Packaging

The label should comply with the requirements of GB 7718. Labels on transportation should be clear, marked with brand, ingredients used, net content, product standard code, producer or sales name, address, date, storage condition, guarantee period and so on.

6.2 Packaging

6.2.1 Packing Material

The plastic bags, cartons, corrugated cartons and other materials should be clean, non-toxic, odorless and stable, and also comply with the food sanitary requirement.

6.2.2 Packing Requirements

Put a certain quantity of packaging into the transportation carton. The products should be placed neatly; the certification of the product qualification should be in the packaging or carton. Glue the bottom of the carton by binder, use the Packing tape or packing belt to keep it tight.

6.3 Transportation

6.3.1 Use frozen or heat preservation tools in the transportation, keep the fish temperature in the range of -18℃±2℃

6.3.2 Transportation tools should be clean, hygienic, and odorless, also keep it away from the sunlight, insect pests, and harmful substances' pollution.

6.4 Storage

Products storage room should be clean, hygienic, odorless, away from the sunlight, insect pests, harmful substances' pollution and other harm. Frozen tilapia fillets should be separately placed based on the different varieties, specifications, levels and batches. Put the base plate down it to keep 10cm away from the ground, stacked height carton compression deformation is appropriate. The storehouse temperature should be lower than -18℃,the fluctuation should be within ±3℃

National Standards of People's Republic of China

GB/T 5055-2008

Black Carp, Grass Carp, Silver Carp, and Bighead Carp-Parents

Issued on: 2008-06-17 Implemented on: 2008-10-01

Issued by General Administration of Qualify Supervision, Inspection and Quarantine of the People's Republic of China & Standardization Administration of China

Foreword

The standard replaces GB/T 5055-1997< Black carp, grass carp, silver carp, and bighead carp-Parents>

As compared to the earlier version GB/T 5055-1997, the key changes are as follows:

- Added the reference of germplasm standard and inspection method in “normative reference”
- Incorporated chapter 2 from the previous edition into the new edition’s chapter 3 under the heading – Source and made relevant modifications to the contents
- Consolidated chapter 3 “external appearance”, chapter 4 “reproduction age and weight” and chapter 5 “the utility life” from the previous edition to the new edition’s chapter 4 “quality requirement”, add germplasm standard and health condition requirement, external appearance features of bighead carp-parents in reproduction age and age and weight of mature age of bighead carp-parents in reproduction
- Added the chapter of “inspection methods” and “inspection regulation”

The standard is proposed by Agriculture Department of People’s Republic of China and centralized by Freshwater Aquaculture Technical Committee National Standardization Technical Committee of Fishery..

The standard is drafted by the following units: Yangzi River Academy of Fishery of Chinese Academy of Fishery Sciences.

The standards are mainly drafted by Ruiqiong Chou, Zhongfa Xu, and Li Hou.

The standard supersedes all the previous versions as follows,

- GB/T 5055-1985, GB/T 5055-1997

Black Carp, Grass Carp, Silver Carp, and Bighead Carp-Parents

1. Scope

The standard specifies requirements for origin, quality requirements, inspection methods and inspection regulation of Black carp (Mylopharyngodon piceus), grass carp (Ctenopharyngodon idellus), silver carp (Hypophthalmichthys molitrix), and bighead carp (Aristichthys nobilis)-Parents

This standard is applicable to black carp, grass carp, silver carp, and bighead carp-Parents

2. Normative References

Relevant provision in the following six standards will be referenced and enforced as part of this standard.

For any dated references listed in this article, subsequent amendments (excluding errata) or revision are not applicable to this standard. However, all parties, who previously agreed on the applicability of 5055-1997, are encouraged to explore the possibility of using recent editions of the referenced standards listed below.

As for undated references, the latest edition will apply.

GB 17715 Standards for Grass carp

GB 17716 Standards for Black carp

GB 17717 Standards for Silver carp

GB 17718 Standards for Bighead carp

GB/T 18654.2 Standards for Farmed fish germplasm testing Part II: Sampling Methods

GB/T 18654.3 Farmed fish germplasm testing Part III: Characters Inspection

3. Origins

3.1 Take broodstock from natural germplasm resource library of black carp, grass carp, silver carp and bighead carp- Parents, or collect fish fries or juvenile fishes from the above waters and foster them to fish-parent

3.2 Take broodstock from rivers, reservoir and lake that do not stock fishes artificially, or collect fish fries or juvenile fishes from the above waters and rear them to fish-parent

3.3 Take broodstock from stock field with national or province producing license, or collect fish fries or juvenile fishes from the above waters and rear them to fish-parent

4. Quality Requirements

4.1 Germplasm

The germplasm of black carp, grass carp, silver carp and bighead carp-parent should be compliant with GB 17715, GB 17716, GB 17717 and GB 17718

4.2 Appearance

Body shape and color of black carp, grass carp, silver carp and bighead carp-parent should be normal, firm, without disease, disability and distortion.

4.3 Parent- fish in reproduction features

Male: there are lines of stars on pectoral fins and operculum, squash the fish maw and then milk-white semen flows out from cloaca.

Female: there are few or no lines of stars on pectoral fins and operculum; the fish maw is expanded, soft and elastic. The cloaca is outstanding and rosy.

4.4 The age and weight in reproduction age

First sexual matured black carp, grass carp, silver carp and bighead carp should not be used as artificial reproduction fish- parents.

The sexual mature age, the minimum age for reproduction, minimum weight and utility life for black carp, grass carp, silver carp and bighead carp in different river basin refer to table 1, table 2, table 3, and table 4.

Table 1 the sexual mature age, the minimum age, minimum weight and utility life for reproduction of black carp

River basin	Gender	First sexual mature age/ ages	Minimum age for reproduction/ages	Minimum weight for reproduction/kg	Maximum age for reproduction/ages
Pearl river basin	Female	5	6	13	20
	Male	4	5	10	
Yangzi river basin	Female	6	7	14	
	Male	5	6	12	

Table 2 the sexual mature age, the minimum age, minimum weight and utility life for reproduction of grass carp

River basin	Gender	First sexual mature age/ ages	Minimum age for reproduction/ages	Minimum weight for reproduction/kg	Maximum age for reproduction/ages
Pearl river basin	Female	4	5	8	14
	Male	3	4	7	
Yangzi river basin	Female	4	5	6	
	Male	3	4	4	
Yellow river basin	Female	5	6	7	15
	Male	4	5	6	
Amur river basin	Female	6	7	7	16
	Male	5	6	6	

Table 3 the sexual mature age, the minimum age, minimum weight and utility life for reproduction of silver carp

River basin	Gender	First sexual mature age/ ages	Minimum age for reproduction/ages	Minimum weight for reproduction/kg	Maximum age for reproduction/ages
Pearl river basin	Female	3	4	4	12
	Male	2	3	3	
Yangzi river basin	Female	3	4	4	
	Male	2	3	3	
Yellow river basin	Female	4	5	5	14
	Male	3	4	3	
Amur river basin	Female	4	5	5	
	Male	3	4	3	

Table4 the sexual mature age, the minimum age, minimum weight and utility life for reproduction of bighead carp

River basin	Gender	First sexual mature age/ ages	Minimum age for reproduction/ages	Minimum weight for reproduction/kg	Maximum age for reproduction/ages
Pearl river basin	Female	4	5	8	15
	Male	3	4	8	
Yangzi river basin	Female	5	6	10	
	Male	4	5	8	
Yellow river basin	Female	6	7	10	
	Male	5	6	8	
Amur river basin	Female	7	8	13	
	Male	6	7	8	

5. Inspection Methods

5.1 Origin Inspection

Dig into fish-parent files and fish-parent reproduction record

5.2 Germplasm Inspection

The germplasm inspection of black carp, grass carp, silver carp and bighead carp should be compliant with GB 17715, GB 17716, GB 17717 and GB 17718.

5.3 Sensory Inspections

Inspect the body shape, color, features and health condition of carp-parent by visions

5.4 Age Determination

Take scales under dorsal fin base but on lateral line scale as preparation material for age determination

Placed washed scale in between 2 glass sheets, seal it with scotch tape on both ends, observe the growth ring of scale by microscope or projector, determine the age of fish by growth rings

5.5 Weight Determination

Should comply with the requirements of GB/T 18654.3

6. Inspection Regulations

6.1 Inspection Classification

6.1.1 Delivery Inspections

The carp-parent should be inspected when being sold or artificial reproducing. The items in delivery inspections include sensory inspection, age and weight determination

6.1.2 Type Inspection

Items in type inspection are items required by the standard, carps-parent that are not in reproduction period do not need to be inspected. Type inspection should be carried out if the following situation happens.

The change of amount of carp-parents in seed stock situation is huge

Feeding environment is changed which may influence the quality of carp-parent

Type inspection should be carried out when producing regularly

The delivery inspection has huge difference with last delivery inspection

When administrative department related asked

6.2 Batching Regulation

One batch of carp-parent for sale or one batch of carp-parent for reproduction is in one batch of carp-parent for inspection

6.3 Sampling Methods

All the samples for delivery inspection are regarded one batch of samples for inspection; the sampling methods for type delivery inspection should be compliant with GB/T 18654.2

6.4 Judging Principles

If one item is inspected unqualified, then this one carp-parent is judged unqualified.

National Standards of People's Republic of China

GB 17715-1999

Grass Carp

Implemented on: 1999-07-01

Issued by General Administration of Qualify Supervision, Inspection and Quarantine of the People's Republic of China & Standardization Administration of China

Foreword

The standard is issued to appraise, protect and preserve grass carp's good genes and traits. This is done to avoid the mixture and degeneration of genes during reproduction and to carry out effective inspection of grass carp.

This standard is the outcome of the research "85" with contributions from past research, "65" & "75".

Appendix A is contains tips and reminders.

The standard is proposed by Agriculture Department of People's Republic of China.

The standard is centralized by Freshwater aquaculture Technology Committee of Fisheries Standardization Technology Committee of People's Republic of China.

The standard is drafted by the following units: Shanghai Fisheries University, Yangzi River Academy of Fishery of Chinese Academy of Fishery Sciences.

The standard is mainly drafted by Sifa Lee, Jinliang Zhao, Wanqi Cai, Biyun Chou, Guoqing Lv, Zhaoting Fan, Zhongfa Xu.

The standard is implemented on July 1st 1999.

Grass Carp

1. Scope

The standard regulates the main structural features, growth and reproduction, genetic characteristics and inspection methods of grass carp (Ctenopharyngodon idellus)

The standard is applicable to the appraisal of germplasm.

2. Normative References

Relevant provision in the following standard will be referenced and enforced as part of this standard. The latest edition of the standards will be applicable after it has been published. However, all parties are encouraged to explore the possibility of using recent editions of the referenced standards listed below.

GB 17716-1999 Sliver carps

3. Names and Classification

3.1 Scientific Names

Grass carp (Ctenopharyngodon idellus)

3.2 Classifications

Cypriniformes, Cyprinidae, Leuciscinae, Ctenopharyngodon

4. Main Structural Features

4.1 External Structural Features

4.1.1 Appearance

The body of the fish is long with a cylindrical shape in front and flat at the side near the hind of the fish. The fish maw is full without edges. The end of its mouth is curved and the upper jaw protrudes more than its lower jaw. It has a snout that is blunt and round. The eyes are of medium size, located under the side of the axis. The scales are big with well defined lateral line. The gill raker looks like a short rod and is arranged sparsely. The tail looks like a deep fork and the upper and lower leaves are of the same length.

The body is grass-yellow, the back is gray, the abdomen is silvery white and the fin is light gray in colour.

The appearance of a grass carp is as shown in figure 1.

4.1.2 Countable traits

4.1.2.1 Dorsal fin: D3.6~7

4.1.2.2 Anal fin: A3.7~8

4.1.2.3 Lateral line scales: 37 (6~7)/5 - 47

4.1.2.4 The number of outside gill rakers of the first gill arch: 15~24

4.1.3 Measurable forms

For grass carps with a length of 19.6 – 93.4cm or weight of 155.0 – 12750.0g, the proportionate measurements are stated in table 1.

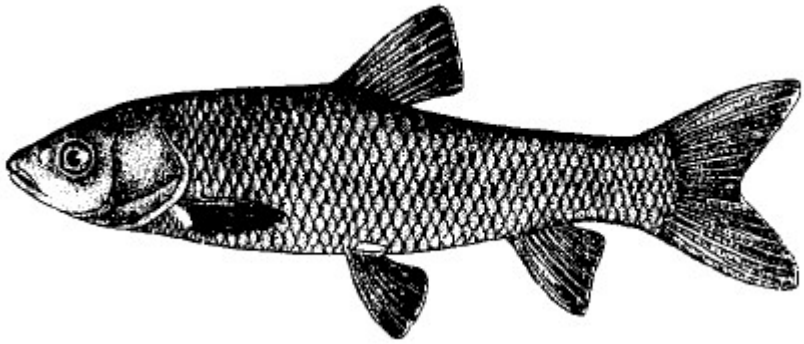


Figure 1: Appearance of Grass Carp

Table 1: Proportional measurement of traits

Whole length/body length	**Body length/ the body height**	**Body length/ head length**	**Head length/ snout length**	**Head length/ eyes diameter**	**Head length/ distance between eyes**	**Body length/ tail length**	**Tail length/ tail height**
1.147+-0.027	4.262+-0.545	4.467+-0.395	3.313+-0.484	7.371+-1.310	1.742+-0.179	8.002+-1.637	1.138+-0.308

4.2 Internal Structural Features

4.2.1 Swim bladder

Two-compartment, the hind one is slimmer and longer

4.2.2 Pharyngeal teeth

2 rows, sickle, serrated, tooth 2.4~5/4~5.2

4.2.3 Spine

The total number of spine: 39~45

4.2.4 Peritoneum

Gray black

5. Growth and Reproduction

5.1 Growths

Table 2 shows the body length and weight of the carp at different age. Please refer to appendix A for more information on the corresponding body length, weight, estimate of the average weight index and growth

formula of different ages of grass carps

Table 2: Body length and weight of different grass carps of different ages

Ages		1+	2+	3+	4+	5+	6+	7+	8+
♂	Body length/cm	32.9~57.8	41.0~69.0	39.5~73.0	69.9~85.0	67.2~85.7	78.0~87.0	75.0~89.0	88.0~90.0
	Weight/g	600~3150	1500~4000	3618~5000	4000~8000	4250~10700	8600~12500	9000~13000	10500~12500
♀	Body length/cm	29.2~59.7	40.0~62.8	54.2~71.2	62.3~83.5	68.5~89.0	74.0~93.5	85.5~96.0	87.5~98.0
	Weight/g	475~3400	1400~3650	3050~6300	4000~9000	6450~10300	7250~12750	11000~15500	12000~15250
1) The age is determined by the rings on scales									

5.2 Reproduction

5.2.1 Sexual maturity age: male age 4~6, female age 3~5

5.2.2 Gonad of grass carps of sexual maturity mature and ovulate every year

5.2.3 Quantity of fecundity: Refer to table 3 for information on different ages

Table 3: Quantity of fecundity of different ages

Age	5+	6+	7+	8+
Weight/g	7916.7+-736.0	9670.8+-1107.1	13371.1+-1057.4	13877.3+-1195.1
Absolute gravidity/grain	(9.62+-3.79)*10^5	(10.44+-4.04)*10^5	(12.36+-4.49)*10^5^5	(14.31+-4.02)*10^5
Relative gravidity, grain/g	122.2+-46.8	106.8+-38.1	92.7+-33.6	103.6+-29.5

6. Genetic Characters

6.1 Cytogenetic

6.1.1 Chromosome number

2 times of somatic chromosomes, 2n=48

6.1.2 Karyotype

Metacentric chromosomes (m groups) 13 pairs; Submetacentric chromosomes (sm groups) 7 pairs;

subsharpmetacentric chromosomes (st groups) 4 pairs, the number of chromosome arms (NF) 88 (Figure 2)

Figure 2: Chromosome shape of grass carp

6.2 Biochemical genetic characteristics

6.2.1 Lactate dehydrogenase (LDH) isoenzyme in muscle

6.2.1.1 Refer to figure 3 for Lactate dehydrogenase (LDH) isoenzyme in muscle spectrum analysis

6.2.1.2 Refer to figure 4 for Lactate dehydrogenase (LDH) isoenzyme in muscle scan

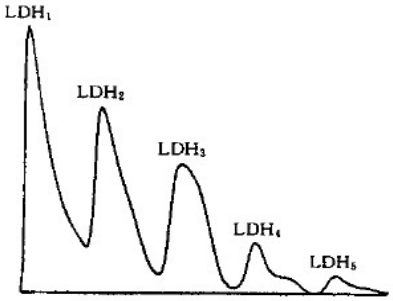


Figure 3: Lactate dehydrogenase (LDH) isoenzyme in muscle **Figure 4: Lactate dehydrogenase (LDH) isoenzyme in muscle enzyme bands scan**

6.2.1.3 Refer to table 4 for the intensity of enzyme activities in Lactate dehydrogenase (LDH) isoenzyme in muscle

Table 4: Intensity of enzyme activities of Lactate dehydrogenase (LDH) isoenzyme in muscle

Enzyme	LDH1	LDH2	LDH3	LDH4	LDH5
Intensity of activity	47.2	19.1	13.5	5.2	1.9

6.2.1.4 Variability range for group: The percentage of polymorphic loci in a group of grass carp is 20.0%~33.3% with an average heterozygosity of 0.0454~0.1076

7. Inspection Method

7.1 Determination of age

Refers to GB 17716

7.2 Determination of Fecundity

Refers to GB 17716

7.3 Determination of Chromosomes

Refers to GB 17716

7.4 Analysis of Lactate dehydrogenase isoenzyme spectrum (LDH)

Refers to GB 17716

Appendix A

(Reminder appendix)

Body length, weight, estimate of the average weight index and growth formula for different ages of grass carps

A1 Body length and estimated average weight index

Refers to table A1

Table A1: Body length and estimated average weight index for different ages

Age		0+	1+	2+	3+	4+	5+	6+	7+
♂	Estimated Body length/cm	23.9	39.1	52.8	64.3	72.3	78.4	82.7	87.0
	Estimated Weight/g	260.0	1147.5	2447.5	4093.5	6874.2	8533.8	9841.5	11400
♀	Estimated Body length/cm	22.2	38.4	51.5	61.9	70.2	78.0	85.4	89.7
	Estimated Weight index/g	210.5	1066.0	2293.3	3076.5	5873.7	7856.0	10088.9	12100

A2 Formula to calculate growth

Female

$$L_t = 113.6[1 - e^{-0.1911(t+0.1165)}] \quad \cdots\cdots (A1)$$

$$W_t = 23\,916.1[1 - e^{-0.1911(t+0.1165)}]^3 \quad \cdots\cdots (A2)$$

Male

$$L_t = 102.7[1 - e^{-0.2317(t+0.1645)}] \quad \cdots\cdots (A3)$$

$$W_t = 16\,360.8[1 - e^{-0.2317(t+0.1645)}]^3 \quad \cdots\cdots (A4)$$

Legend:

Lt- Body length of grass carp in t age, cm

Wt- weight of grass carp in t age, cm

e- Natural logarithm

t- Age of grass carp

A3 Relationship between body length and weight

A 3.1 Fingerling stage

$$W = 0.0297 \times L^{2.8580} \quad \cdots\cdots (A5)$$

Legend:

W- weight of grass carp, g

L- Body length of grass carp, g

A 3.2 Edible commercial fish stage

$$W = 0.078\,1 \times L^{2.605\,8} \qquad \cdots\cdots (A6)$$

A 3.3 Brood stock stage

Female $W = 0.047\,1 \times L^{2.776\,0}$ ……(A7)

Male $W = 0.074\,7 \times L^{2.667\,1}$ ……(A8)

National Standards of People's Republic of China

GB 17717-1999

Silver Carp

Implemented on: 1999-07-01

Issued by General Administration of Qualify Supervision, Inspection and Quarantine of the People's Republic of China & Standardization Administration of China

Foreword

The standard is issued to appraise, protect and preserve silver carp good genes and traits. This is doen to avoid the mixture and degeneration of genes during reproduction and to carry out effective inspection of silver carp.

This standard is the outcome of the research “85” with contributions from past research, “65” & “75”.

Appendix A is contains tips and reminders.

The standard is proposed by Agriculture Department of People’s Republic of China.

The standard is centralized by Freshwater aquaculture Technology Committee of Fisheries Standardization Technology Committee of People’s Republic of China.

The standard is drafted by the following units: Shanghai Fisheries University, Yangzi River Academy of Fishery of Chinese Academy of Fishery Sciences.

The standard is mainly drafted by Sifa Lee, Jinliang Zhao, Wanqi Cai, Biyun Chou, Guoqing Lv, Zhaoting Fan, Zhongfa Xu.

The standard is implemented on July 1st 1999.

Silver Carp

1. Scope

The standard regulated the main structural features, growth and reproduction, genetic characteristics and inspection methods of silver carp (Hypophthalmichthys molitrix)

The standard is applicable to the appraisal of germplasm.

2. Normative References

Relevant provision in the following standard will be referenced and enforced as part of this standard. The latest edition of the standards will be applicable after it has been published. However, all parties are encouraged to explore the possibility of using recent editions of the referenced standards listed below.

GB 17716-1999 Silver carps

3. Names and Classification

3.1 Scientific Names

Silver carp (Hypophthalmichthys molitrix)

3.2 Classifications

Cypriniformes, Cyprinidae, Hypophthalmichthyinae, Hypophthalmichthys

4. 4 Main Structural Features

4.1 External Structural Features

4.1.1 Appearance

The side body is flat and slightly high, there are edges between the pectoral and ventral anus. The head is slightly big, taking 1/4 of the whole body, snout is blunt and round, while the mouth is big and slanting. Jaw tilt upward. The eyes are small, located under the side of the axis. The scales are tiny, the lateral lines are complete, gill rakers are specialized. Silver carp has suprabranchial organ, the tail is of deep fork and the end of pectoral fins connect to or over pelvic fin base.

The body is silver-white, the back is gray, the maw is silvery white and the fin is light gray. The edge of dorsal and audal fin is slightly black.

The appearance is silver carp is like figure 1

4.1.2 Countable traits

4.1.2.1 Dorsal fin: D3.6~7

4.1.2.2 Anal fin: A3.11~14

4.1.2.3 Lateral line scales: 97 (26~27)/(16~18) - 124

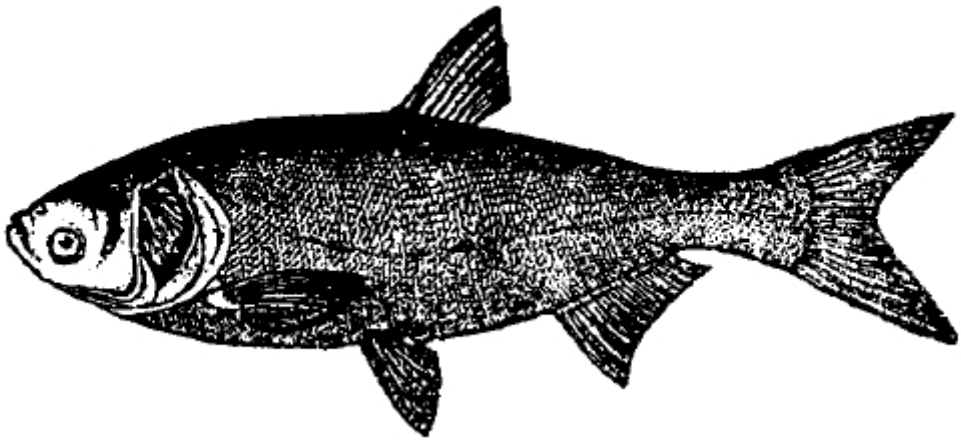


Figure 1: Appearance of silver carp

4.1.3 Measurable forms

For silver carps with a length 21.8~91.0 cm or weight of 180.0~19500.0g, refers to proportionate measurements are stated in table 1.

Table 1: Proportionate measurement of traits

Whole length/body length	Body length/ the body height	Body length/ head length	Head length/ snout length	Head length/ eyes diameter	Head length/ distance between eyes	Body length/ tail length	Tail length/ tail height
1.170+-0.034	3.349+-0.193	3.840+-0.246	3.619+-0.480	8.443+-1.552	1.936+-0.155	8.296+-0.896	1.127+-0.123

4.2 Internal Structural Features

4.2.1 Swim bladder

Two-compartment: Front compartment is long and bigger, the hind one is slimmer, longer and conical in shape.

4.2.2 Pharyngeal teeth

2 rows, sickle, serrated, tooth 4/4

4.2.3 Spine

The total number of spine: 40~42

4.2.4 Peritoneum

Black

5. Growth and Reproduction

5.1 Growths

Table 2 shows the body length and weight of the carp at different age. Please refer to appendix A for more information on the corresponding relationship between body length and weight, estimate of the average weight index, growth formula.

Table 2: body length and weight of different silver carps of different ages

age		1+	2+	3+	4+	5+	6+
♂	Body length/cm	31.9~52.6	45.5~61.2	45.7~67.0	54.0~74.5	63.5~79.2	77.0
	Weight/g	495~2400	1715~4450	1920~6800	4400~7500	4700~9500	9500
♀	Body length/cm	30.3~53.5	38.3~62.7	54.2~68.5	53.3~76.0	66.5~84.0	81.0~91.0
	Weight/g	500~2800	900~4250	3000~6800	2500~9500	6500~12500	11000~12500

5.2 Reproductions

5.2.1 Sexual maturity age: male age 3~5, female age 2~4

5.2.2 Gonad of silver carp of sexual maturity matures and ovulates every year

5.2.3 Quantity of fecundity: Refer to table 3 for information on the different ages

Table 3: Quantity of gravidity of different ages

Age	3+	4+	5+
Weight/g	5713.5+-806.7	5959.3+-682.3	7321.4.1+-894.4
Absolute gravidity/ grain	(6.22+-1.92)*10^5	(6.69+-1.35)*10^5	(8.63+-1.55)*10^5
Relative gravidity, grain/g	110.6+-36.2	112.5+-27.6	119.7+-30.9

6. Genetic characters

6.1 Cytogenetic

6.1.1 Chromosome number

2 times of somatic chromosomes, 2n=48

6.1.2 Karyotype

Metacentric chromosomes (m groups)13 pairs; Submetacentric chromosomes (sm groups) 7 pairs; subsharpmetacentric chromosomes (st groups) 4 pairs, The number of chromosome arms (NF) 88 (Figure 2)

Figure 2: Chromosome shape of silver carp

6.2 Biochemical genetic characteristics

6.2.1 Lactate dehydrogenase (LDH) isoenzyme in muscle

6.2.1.1 Refer to figure 3 for Lactate dehydrogenase (LDH) isoenzyme in muscle spectrum analysis

6.2.1.2 Refer to figure 4 for Lactate dehydrogenase (LDH) isoenzyme in muscle scan image

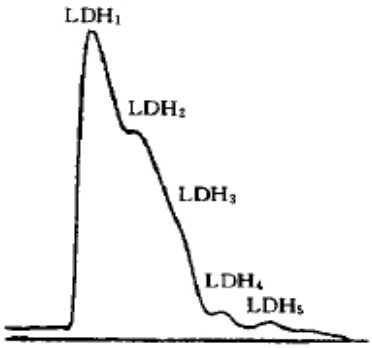


Figure 3: Lactate dehydrogenase (LDH) isoenzyme muscle isoenzyme in muscle enzyme bands scan

Figure 4: Lactate dehydrogenase (LDH) in

6.2.1.3 Refer to table 4 for the intensity of enzymes activities in Lactate dehydrogenase (LDH) isoenzyme in muscle

Table 4: Intensity of enzymes activities of Lactate dehydrogenase (LDH) isoenzyme in muscle

Enzyme	LDH1	LDH2	LDH3	LDH4	LDH5
Intensity of activity	45.0	32.3	18.6	2.8	1.4

6.2.1.4 Variability range for group: The percentage of polymorphic loci in a group silver carp is 11.8%~23.5% with an average heterozygosity of 0.0484~0.0591

7. Inspection Method

7.1 Determination of age

Refers to GB 17716

7.2 Determination of Fecundity

Refers to GB 17716

7.3 Determination of Chromosome

Refers to GB 17716

7.4 Analysis of Lactate dehydrogenase isoenzyme spectrum analysis (LDH)

Refers to GB 17716

Appendix A

(Reminder appendix)

Body length, average weight refund calculation value, growth formula, relation of body length and body weight

A1 Body length and estimated average weight index

Refer to table A1

Table A1: Body length and estimated average weight index for different ages

Age, ages		0+	1+	2+	3+	4+	5+
♂	Estimated body length/cm	20.4	36.2	46.5	57.4	64.6	73.7
	Estimated weight/g	140.7	790.2	1708.7	3258.9	4618.2	6812.6
♀	Estimated body length/cm	19.5	35.1	49.5	59.6	69.0	78.2
	Estimated weight/g	125.3	718.6	2752.7	4586.9	6861.7	9680.9

A2 Formula to calculate growth

Female

$$L_t = 125.6[1 - e^{-0.1607(t+0.0684)}] \quad \cdots\cdots (A1)$$

$$W_t = 52\,962.6[1 - e^{-0.1607(t+0.0684)}]^3 \quad \cdots\cdots (A2)$$

Male

$$L_t = 111.1[1 - e^{-0.1758(t+0.1933)}] \quad \cdots\cdots (A3)$$

$$W_t = 31\,766.7[1 - e^{-0.1758(t+0.1933)}]^3 \quad \cdots\cdots (A4)$$

Legend:

Lt- Body length of silver carp in t age, cm

Wt- weight of silver carp in t age, cm

e- Natural logarithm

t- The age of silver carp

A3 Relationship between body length and weight

A 3.1 Fingerling stage

$$W = 0.019\,9 \times L^{2.943\,3} \qquad \cdots\cdots (A5)$$

Legend:

W- weight of silver carp, g

L- body length of silver carp, g

A 3.2 Edible commercial fish stage

$$W = 0.012\,5 \times L^{3.082\,4} \qquad \cdots\cdots (A6)$$

A 3.3 Brood stock stage

Female

$$W = 0.062\,0 \times L^{2.751\,1} \qquad \cdots\cdots (A7)$$

Male

$$W = 0.021\,1 \times L^{2.949\,7} \qquad \cdots\cdots (A8)$$

National Standards of People's Republic of China

GB/T 24403-2009

Canned Tuna

Issued on 2011-06-16 Implemented on: 2011-11-01

Issued by General Administration of Qualify Supervision, Inspection and Quarantine of the People's Republic of China & Standardization Administration of China

Foreword

This standard is not equivalent to the CODEX STAN 70-1981,Rev,1-1995.< Canned tuna > of Codex Alimentarius Commission (CAC) (English Edition).

This standard is proposed by China National Light Industry Federation.

This standard is centralized by the National Technical Committee of Standardization Technical Committee.

This standard is drafted by Chinese Research Institute of Food and Fermentation Industries, China Canned Food Industry Association, Liaoning Ocean Fishery Group and Ningbo Jia Food Co., Ltd.

This standard's main draftsmen are: Zhenghe Xiong. Zugang Zhang, Yiqi Yu, Shuming Guo, Kai Chou.

Canned Tuna

1. Scope

This standard specifies requirements for product classification, product code, technical requirements, inspection methods, inspection rules, label, package, transportation and storage.

This Standard applies to the production, circulation and supervision.

2. Normative References

The normative documents that have been referenced in this text are essential to the interpretation and application of this standard. For dated references, only the edition bearing the stipulated date is applicable to this standard. For undated references, the latest edition of the normative document (including all its amendments) will apply.

GB 2716 Hygienic Standard of Edible Vegetable Oil

GB 2733 Fresh, Frozen Animal Aquatic Products Hygienic Standard

GB 2760 Hygienic Standards for Uses of Food Additives

GB/T4789.26 Microbiological Examination of Food Hygiene – Canned Food Commercial Sterilization Test

GB 5461 Standards for Edible Salt

GB 5749 Standards for Drinking Water Quality

GB 7718 General Standard for the Labeling of Prepackaged Food

GB10146 Hygienic Standards for Edible Animal Fats

GB/T 10786 Standards for Canned Food Inspection Methods

GB/T 12457 Standards for Determination of Sodium Chloride in Food

GB 14939 Hygienic Standards for Fish Canned Food

GB/T 1006 Standards for Canned Food Inspection Rules

GB/T 3600 Standards for Canned Food Packaging, Labels, Transportation and Storage

3. Terms and Definitions

The following terms and definition apply for this standard.

3.1 Canned tuna

Refers to canned tuna manufactured through proper processes such as pre-dealing, canning, sealing, sterilizing. Key ingredients include tuna, skipjack, water, edible salt and oil.

3.2 Solid

Refers to the lean meat that is left after modification

3.3 Chunk

Refers to a thick fish block with length not less than 1.2cm after modification

3.4 Flake or Grated

Refers to small pieces detached from the larger piece of tuna after modification

4. Product Classifications and Product Code

4.1 Product Classification

4.1.1 Classification Principle

According to the production process and different seasoning methods, the products can be classified into oil immersed tuna can, steamed tuna can (dip in undiluted liquid, salty water) and seasoned tuna.

4.1.2 Oil Immersed Tuna Can

The oil immersed tuna can is produced by using either tuna or frozen boiled tuna as main ingredients. The product is produced by processing, packaging into a can, seasoning, sealing, sterilizing and finally cooling it down.

4.1.3 Steamed Tuna can (dip in undiluted liquid, salty water)

The steamed tuna can is produced by using tuna or frozen boiled tuna as main ingredients. The product is produced by processing, packaging into a can, adding of salty water, sealing, sterilizing and finally cooling it down.

4.1.4 Seasoned Tuna can

The seasoned Tuna can is produced by using tuna or frozen boiled tuna as main ingredients. The product is produced by processing, packaging into a can, seasoning, sealing, sterilizing and finally cooling it down. Examples of season tuna can include spicy tuna, tuna with spices and vegetable tuna.

4.2 Product Code

Oil Immersed Tuna Can Product Code: 315

Steamed Tuna Can Product Code: 315 1

Seasoned Tuna Can Product Code: 476

5. Technical Requirements

5.1 Main Materials

5.1.1 Tuna

Use fresh, well-frozen tuna, skipjack or other frozen boiled fish, the organ should be tense, deteriorated tuna cannot be used. Conform to GB 2733.

5.1.2 Edible Salt

Should comply with the requirements of GB 5461

5.1.3 Edible Oil

Should comply with the requirements of GB 2716 and GB10146

5.1.4 Water

Should comply with the requirements of GB 5749

5.2 Sensory Requirement

Sensory requirements should comply with the requirements listed in Table 1.

Table 1: Sensory Requirements

Items	Requirements
Color and Luster	Possesses the color and luster that products supposed to have
Taste and Aroma	Harmonized palate and pure/authentic aroma, without unusual taste or aroma
Organ Form	Muscle should be tense and fresh, no blood clot, little pieces is allowed both in the solid and chunk tuna can

5.3 Physicochemical Index

The product physicochemical index should refer to the requirements in Table 2

Table 2: Physicochemical Index

Items	Index		
	Oil Immersed Tuna Can	Steamed Tuna Can	Seasoned Tuna Can
Net content	Should conform to the rules of Measurement Supervision and Administration of Prepackaged Commodities with Fixed Content		
Solid Content [a] ≥	60%	50%	55%
Sodium Chloride Content ≤	3.5%		

[a] Solid content deviation requirements: If the can solid content is below 245g, the allowed deviation is ±11%. If it is between 246g-500g, the allowed deviation is ±8.9% and if it is above 1600g, the allowed deviation is ±4%.

5.4 Polutant Index

The content of the lead, inorganic arsenic, methyl mercury, tin, mercury, polychlorinated biphenyl should comply with the requirements of GB 14939.

5.5 Bacteriological Requirements

The bacteriological requirements in food should comply with the requirements of canned food commercial sterilization.

5.6 Food Additives

The usage of food additives should comply with the requirements of GB2760.

6. Test Methods

6.1 Sensory Analysis

The test should comply with the requirements of GB/T 10786.

6.2 Net Content

The test should comply with the requirements of GB/T 10786.

6.3 Solid Content

The test should comply with the requirements of GB/T 10786.

6.4 Sodium Chloride

The test should comply with the requirements of GB/T 12457.

6.5 Lead, Inorganic Arsenic, Methyl Mercury, Tin, Mercury, Polychlorinated Biphenyl Content

The test should comply with the requirements of GB 14939.

6.6 Bacteriological Index

The test should comply with the requirements of GB/T 4789.26.

7. Test Rules

Should comply with the requirements of QB/T 1006

If the sensory and physical characteristics do not comply with the standard technical requirements, it should be marked as defects and refer to Table 3 for the classification.

Table 3: Defects Classification

Defects Classification	Sensory and Physical characteristics
Serious Defects	Obvious peculiar smell; Pollution by Iron Sulfide; Existence of harmful substances, such as glasses, hair, and insects
Usual Defects	Existence of usual impurity, such as cotton thread, synthetic filament; Existence of hard bone or hard spines; Solid content is higher than the allowed deviation.

8. Label, package, transportation, storage

8.1 Label

8.1.1 Should comply with the requirements of GB 7718.

8.1.2 “Consume as soon as possible after opening”, should be marked on the label.

8.1.3 The label should state the solid content ［measured by weight (g) or weight percentage］, the average solid content of each product should not be lower than the marked value.

8.2 Package, Transportation, Storage

Should comply with the requirements of QB/T 3600

National Standards of People's Republic of China

GB/T 26619-2011

Giant Tiger Prawn

Issued on 2011-06-16 Implemented on: 2011-11-01

Issued by General Administration of Qualify Supervision, Inspection and Quarantine of the People's Republic of China & Standardization Administration of China

Foreword

The appendix C of this standard is normative document, appendix A and B are quoted documents.

This standard is proposed by the People's Republic of China Ministry of Agriculture.

This standard is centralized by the Marine Culture Technology Committee of The National Aquatic Product Standardization Technical Committee.

This standard is drafted by Yellow Sea Fisheries Research Institute Chinese Academy of Fishery Sciences, Ocean University of China.

This standard's main draftsmen are: Yan Zhang, Han Yu, Yongshuang Xiao, Hua Zhang.

Giant Tiger Prawn

1. Scope

This standard specifies requirements for the main appearance characteristics, growth and breeding characteristics, genetic characteristics and inspection methods of giant tiger prawn (Penaeus monodon).

This Standard applies to the test and definition towards the idioplasm of giant tiger prawn.

2. Normative References

The normative documents that have been referenced in this text are essential to the interpretation and application of this standard. For dated references, only the edition bearing the stipulated date is applicable to this standard. For undated references, the latest edition of the normative document (including all the amendments) will apply.

GB/T18654.12 Inspection of Farmed Fish Idioplasm Test the twelfth part: chromosome idiogram analysis

GB/T 19782 Standards for Chinese Prawn

3. Terms and Definitions

The following terms and definitions apply to this document.

3.1 Body Length

From eyestalk base or frontal angle edge to the end of the tail section

3.2 Carapace Length

From the central line of Orbital trailing edge to head cuirass the trailing edge

4. Name and classification

4.1 Scientific name

Penaeus mondon Fabricius, 1798

4.2 Position Classification

Arthropoda, Crustacea, Decapoda, Penaeidae, Penaeus

5. Form Character

5.1 Appearance

The body surface is smooth, shell is a little thick, body colors alternate between deep green, deep brown and light yellow, forming belly stripes. With the belly swimmeret light blue, front protopodite yellow, the edge wild peach red, the second, third feet firm Wild peach red. Refer to figure 1 for the external form.

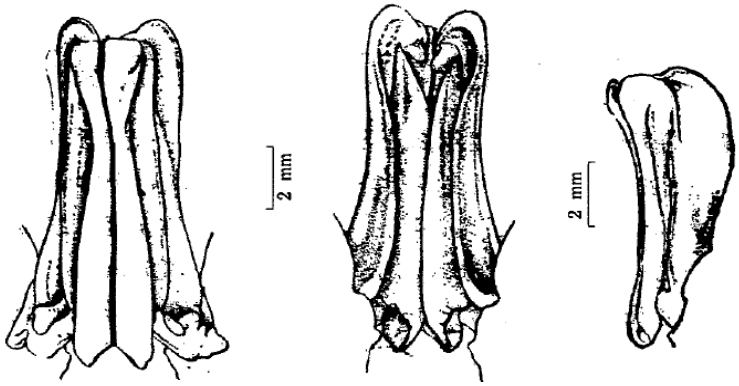
Figure 1: External form of Giant tiger prawn

Frontal angle quite straight, the end quite thick, a little bent, stretches to the end of first tentacle, upper limb with 7-8 teeth, spines on the stomach is quite far away from the first tooth, doubling the distance of the second tooth and the third tooth. Frontal back fin stretches nearly to the end of carapace. Frontal lateral ridge is low and dull, stretching to the downward of the spines on the stomach. Carapace has Orbital antenna channel and neck furrow. Frontal back fin has obvious central sulcus, but quite swallow and narrow, stretching backward, with no frontal stomach ditch. Liver ridge is broad and dull with the front parts horizontally stretching, the back part low. Eye stomach ridge nearly occupy 2/5 distance from head cuirass eyes edge to liver thorn. Head cuirass has tentacles thorn, liver thorn and stomach thorn. Orbital Angle is round. The antero-lateral horn is round with no genal spines. The longitudinal ridge exists in the belly from the fourth part center to the sixth back center. The length of the sixth part is 1.1 the height, the end is sharp, no lateral margin thorns. The prawn carapace separated parts refer to appendix A.

The first tentacle thorn stretches to the center of first joint; the edged end thorn is quite small, inner side appendage stretches to the end of first part or beyond. The first tentacles whip is short, the whip below is nearly 2/3 of the head cuirass, the upper whip is shorter, and the thick part of the upper whip base occupies 1/3 of the whip length. The tentacle scale exceeds the end of the first tentacle handle. The third forehead feet stretch to the third part end of the first tentacle handle (matured male), for female and the young male, to the first part end. The male dactylus length is almost same as propodite, near the 1/5 of the end of the plam with feathering. For female, dactylus is 1/2 -1/3 of the propodite. The first paraeiopod stretch to or exceed the end of the second tentacle handle. The third paraeiopod is the longest, stretching to the end of the first tentacle handle or exceeding the dactylus. The fifth paraeiopod stretches to the first part center of the second tentacle handle. The first paraeiopod has Coxa thorn and ischial spine, the second paraeiopod only has coxa thorn. The first paraeiopod to the fourth paraeiopod all have exopodite, the fifth has not (the case of appearance, somite, appendage, please refer to appendix A).

5.2 Male Claspers

The end of the lobus medius back is small, semicircular, side vane is quite broad, the top is nearly round, obviously exceed to the out of the lobus medius, with small teeth on the end. The male claspers of giant tiger prawn refer to Figure 2.



back view of male claspers ventral view of male claspers side view of male claspers

Figure 2: Male claspers of giant tiger prawn

5.3 Male appendage

Little like a trapezoid, the length is nearly double the max width, the half end is narrow, base is wide, edge with solid spine .the male appendage of giant tiger prawn refers to figure 3.

Figure 3: Male appendage of giant tiger prawn

5.4 Female claspers

There is a thick calcification hunching in the fourth ambulatory leg, with long and dense bristle on the margin, corolla-like, a bulge connecting with the breach in the center front of the spermatheca. Spermatheca looks like plate, width larger than length, nearly 1.2 times of the length, the breach is thick as lip.The female appendage of giant tiger prawn refers to figure 4.

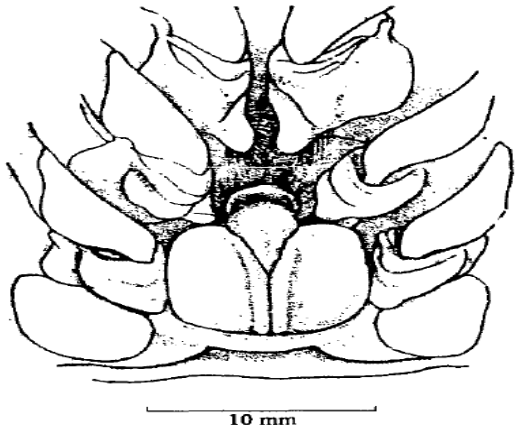


Figure 4: Female Appendage of Giant Tiger Prawn

5.5 Measurable character

5.5.1 The first tentacles whip is quite long, nearly 2/3 of the head cuirass length.

5.5.2 Eye stomach ridge nearly occupy 2/5 distance from head cuirass eyes edge to liver thorn.

5.5.3 The length of the sixth part is 1.1 times of the height.

5.5.4 Telson is a little longer than the sixth part.

5.5.5 The whip below of the first tentacles whip is nearly 2/3 of the head cuirass, the thick part of the upper whip base occupies 1/3 of the whip length.

5.6 Accountable character

The frontal angle tooth-type includes 7-8/2-3, mainly 7/3.

6. Growths and Breeding

6.1 Lifetime

In the natural water area, the usual lifetime of male shrimp is 1-1.5 years and the usual lifetime of female shrimp is about 2 years.

6.2 The relationship of body length and height

The relationship of body length and height of giant tiger prawn group living in the northwest of South Sea refers to formula (1) and (2).

Female shrimp: $W = 1.1274 \times 10\text{-}5L3 \cdot 0411$ (r=0.9953,n=52) ……(1)

Male shrimp: $W = 7.6366 \times 10\text{-}6L3 \cdot 1151$ (r=0.9815,n=48)…… (2)

Where，

W is weight, unit is gram (g)

L is length, unit is millimeter (mm).

The measured value of length and weight of different age groups refers to appendix B.

6.3 Breeding

6.3.1 Microorganisms

The smallest giant tiger prawn's body length is 189 mm and weight is 95g at its first sexual matured time.

6.3.2 Oviposition

The breed period of giant tiger prawn is quite long, from July to February of the following year. Ovum matures and outputs separately.

6.3.3 Breeding Ability

The brood amount of the giant tiger prawn differs with the individual size, from 109×104 pellets /tail-211.8 ×104 pellets /tail, average 154 ×104 pellets, the brood amount is 30 ×104 pellets to 100×104 pellets.

6.3.3 Ovum characteristics

The ovum of giant tiger prawn is round, yellow green, slightly transparent and diameter is in the range of 0.27mm-0.31mm. The ovum would sink slowly into the still water. Segmentation Of ovum is equally segmented.

7. Cell genetics character

The chromosome number of giant tiger prawn is 2n=88.

8. Biochemical genetics character

8.1 Isozyme Zymogram

The lactate dehydrogenase LDH isozyme zymogram of the matured giant tiger prawn refers to figure 5, appearing like an enzyme belt.

Figure 5: Lactate Dehydrogenase（LDH）Isozyme Zymogram of the Matured Giant Tiger Prawn

8.2 Variation range of population genetics

The average heterozygosity to sanya populations and naughton island population are 0.3596 and 0.3254 respectively, the polymorphism point scale percentage of Xiamen farming population is 61.96%, expected heterozygosity He is 0.151, observed heterozygosity H0 is 0.120.

9. Inspection Methods

9.1 Form analysis

Use the straight rule to measure the length, precise to 1mm.

9.2 Growth

Use the straight rule to measure the length, precise to 1mm. Use the absorbent paper to absorb its water, weigh it by the tray torsion balance to measure its weight (wet weight), precise to 0.1g. Use Excel to sum up and analyze the data. The relationship of body weight and length should be represented by W=a Lb .

9.3 Breeding ability analysis

Measure the weight of giant tiger prawn before and after breeding by balance or steelyard, take the right born ovum about 1.0g under the anatomical lens, measure and average two times, the average number is ovum density (pellet /g).The ovum accounting refers to formula(3):

G = (W1 -W2) (n1 /2w sample1+n2 / 2w sample 2 ）

Where,

G------ovum, unit is pellet;

W1----------the weight of parent prawn before breeding, unit is gram (g);

W2----------the weight of parent prawn after breeding, unit is gram (g);

n1----------the ovum number of sample 1, unit is pellet;

w sample 1------the weight of sample 1, unit is gram (g);

n2----------the ovum number of sample 2, unit is pellet;

w sample 2------the weight of sample 2, unit is gram (g);

9.4 Cell Genetics Characteristerics

Take a male giant tiger prawn, inject colchicine solution in the side between first and second joint (density follows 1. 5 μg/g weight), after injection, put it temporary in the water container for 4-6 hours. Take it out and dissect it, get the spermary, make it hypotonic by potassium chloride (KCl), stable it with Carony's liquid, make piece by air drying, dry by Gimsa, have microscopic examination, choose the well dispersed chromosome and count it. The account method complies with the requirements of GB/T 18654.12.

9.5 Biochemical genetics character

Take the muscle into the 5 times volume phosphate buffer, 0.05 mol/L (pH7.0) (Preparation methods refer to appendix C) ice bath homogenate, centrifuge with the speed of 13 500 r/min for 15 minutes in 4℃take the clear liquid, mix with Bromine Fen blue sample buffer (Preparation methods refer to appendix C), immediately electrophoresis or kept in -20℃Cataphoresis in 200v for 12hours in 24hours,adopt TG buffering system, the preparation of buffer solution refer to Appendix C. Use vertical plate polypropylene amine adhesive gel to have Cataphoresis, the density of separation gel and spacer gel is separately 7.5% and 2.5%, the preparation of staining fluid conform to GB/T 19782.

In the population genetics character, the statistics of Sanya populations and Naughton island populations is

the testing result of ME, MDH, GDH, LDH, PGM, ALP, ACP, SOD, EST these 9 isozyme in the mascle and liver membrane gland organ of 30 pair samples. Polymorphic site percentage (p), average heterozygosity observed number (H0), expected heterozygosity(He) are separately accounted by formula(4),(5),(6):

P=N1/n×100% ------ (4)

Where:

p------ Polymorphic site percentage;

N1------ Polymorphic site number

n------total tested site number

H。＝（∑H1)/n ----- (5)

Where:

H。------ average heterozygosity observed number;

H1------ Polymorphic site number heterozygosity observed number;

n------ total observed site number

He =［∑(1-∑q^2)］/n----- (6)

Where:

He ------ expected heterozygosity;

q------ homozygous genotype frequency;

n------ total observed site number.

Appendix A

(Quoted Appendix)

The section and appearance of giant tiger prawn carapace

A. 1 The section of Giant Tiger Prawn Carapace

The section of giant tiger prawn carapace refer to Figure A.1

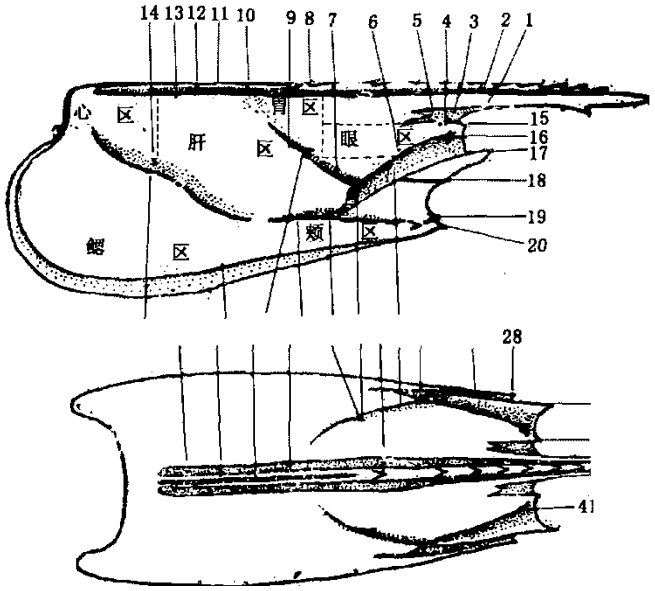


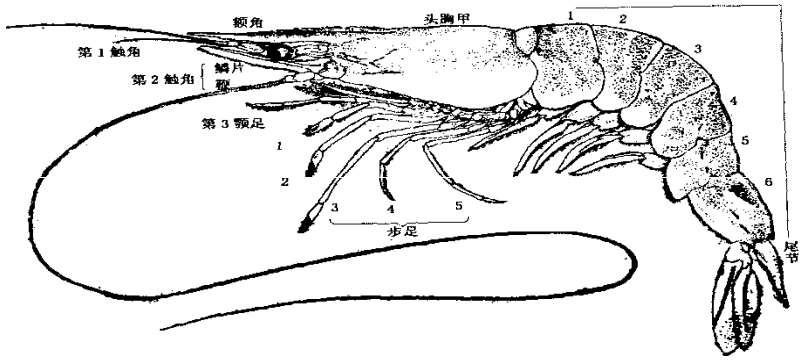
Figure A. 1: The Section of Giant Tiger Prawn Carapace

1 – frontal angle;
2 – the frontal side ditch;
3 – the frontal furrow;
4 – the frontal ridge;
5 – the posterior ditch;
6 – Eye stomach ridge;
7 – neck furrow;
8 – spines on the stomach;
9 – cervical carina;
10 – the frontal side ditch;
11 – central sulcus;
12 – the frontal back ridge;
13 – the frontal side ridge;
14 – heart gill ditch;
15 – orbit spines;
16 – posterior thorn;
17 – tentacles thorn;
18 – tentacles ridge;
19 – gill armour spines;
20 – genal spine;
21 – orbit antennal groove;
22 – liver thorn;
23 – the liver channel;
24 – liver ridge;
25 – liver thorn;
26 – The marginal ridge;
27 – heart gill ridge;
28 – genal spine;
29 – orbit antennal groove;
30 – liver thorn;
31 – cervical carina;
32 – Liver thorn;
33 – neck furrow;
34 – second liver thorn;
35 – the frontal side ditch
36 – central sulcus;
37 – the frontal back ridge;
38 – the frontal side ridge;
39 – tentacles thorn;
40 – orbit spines;
41 – the posterior spines;

A.2 The Appearance of Giant Tiger Prawn

The state of giant tiger prawn appearance (side), body joints, appendage refers to chart A.2

Figure A.2: Giant Tiger Prawn Appearance (side)



Appendix B

(Quoted Appendix)

The measured body length and weight of giant tiger prawn of different age in days

The measured body length and weight of giant tiger prawn of different age in days refer to chart B.1.

Chart B.1 Measured Body Length and Weight of Giant Tiger Prawn of different age in days

Age in days/d	46	66	82	102	128	142	156	178	202	218	238	255
Body length of male prawn/mm	25.2	51.8	68.8	85.1	103.6	116.3	122.2	132.3	142.1	146.3	150.5	155.2
Weight of male prawn/g	0.27	2.28	5.27	9.86	17.62	24.78	28.67	36.24	44.75	48.76	53.01	58.04
Body length of female prawn/mm	22.4	51.6	66.7	83.9	109	118.1	130.1	145.3	155.2	163.2	171.4	175.5
Weight of female prawn/g	0.20	2.38	5.09	10.04	21.80	27.65	36.84	51.12	62.13	72.11	83.38	89.43
PS: The number of male prawn is 716, the number of female prawn is 784.												

Appendix C

(Normative Appendix)

Solution Preparation

C.1 The preparation of 0.1mol/L phosphoric acid buffer solution (pH 7.0)

1 mol/l dipotassium phosphate (K2 HP04) 61.5 ml, 1mol/l monopotassium phosphate (K H2 P04) 38.5 mL, attenuate it to 1 000 ml with water.

C.2 The preparation of loading buffer

After equally mix the 0.25 % bromophenol blue,0.25 % xylen Glycerin FF, 30 % glycerinum liquid，keep it in the temperature of 4℃

C.3 TG electrophoretic buffer solution

C. 3.1 The preparation of stock solution

15. 1g Tris Hydroxy Methyl Aminomethan (Tris), 94 g glycine (electrophoresis level) (pH8.3), 50 ml 10% uranium dodecyl sulfate. (SDS, electrophoresis level), content to 1000mL.

C. 3. 2 The preparation of working solution

Attenuate the stock buffer to the density of 25 mol/L Tris, 250 mmol/l glycine, 0.1%SDS.

National Standards of People's Republic of China

GB/T 21443-2008

Bay Scallop

Issued on 2008-02-15 Implemented on: 2008-05-01

Issued by General Administration of Qualify Supervision, Inspection and Quarantine of the People's Republic of China & Standardization Administration of China

Foreword

The appendix A, B, C of this standard is normative documents.

This standard is proposed by the Ministry of Agriculture.

This standard is centralized by the Marine Culture Technology Committee of The National Aquatic Product Standardization Technical Committee.

This standard is drafted by Institute of Oceanology of the Chinese Academy of Sciences

This standard's mainly drafted by Baozhong Liu, Guofan Zhang, Bo Dong, Huayong Que, Feng You, Xiaojun Zhang.

Bay Scallop

1. Scope

The standard regulates the appearance, characteristics, growth, breeding behavior, genetic characteristics and the inspection methods of bay scallop（Argopecten irradians Lamarck).

This standard is applicable to the inspection and definition of bay scallop.

2. Name and classification

2.1 Scientific name

Bay scallop: Argopecten irradians Lamarck

2.2 Classification

Mollusca, Lamellibranchia, Pterioida, Penaeidae, Argopecten

3. Biological characteristics

3.1 External form characteristics

3.1.1 Appearance

The shell is fan-shaped with two shells that are almost identical. The right shell is slightly higher and the backward ear is bigger than the front ones. There is a byssus hole at the bottom of the foreward one while a matured bay scallop has no byssus. The twisted part is connected and straight, the rib is broad, high and without spines. The growth striation is visible. There are around 17-18 ribs on surface of the shell. The surface can be grey and black,yellow or grayish white.. The height of a matured bay scallops is about 6cm.

Refer to figure 1 for the external appearance of bay scallop.

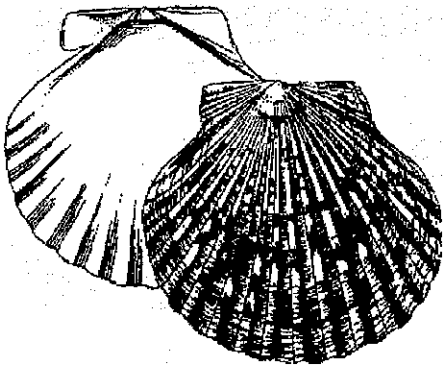


Figure 1 External appearance of the bay scallop

3.1.2 Accountable characteristics

There are 17-18 ribs in the shell surface

3.1.3 Measurable characters

Take 55 matured samples body lengthening from 49.40mm-68.70mm, weighing from 16.43g-36.52g, have quantitative character test, the statistic refers to Table1.

Table 1: The statistic of bay scallop quantitative character

Characteristics	Shell length	Shell breadth/mm	Shell height	Body weight W/g
Average value	55.93	23.67	53.82	25.37
Standard deviation	±4.41	±2.07	±3.86	±5.23

3.14 The relationship between weight and shell length

The relationship between weight and shell length of bay scallop in the natural condition refers to formula (1).

W = 0.0032*L^2.2244 ------- (1)

Where,

W – The shell weight when length is L, unit is gram (g).

L – The shell length when weight is W, unit is millimeter (mm).

3.2 Inner structure characteristics

3.2.1 Pallium

Simple pallium has pallial eye and tentacles.

3.2.2 Breeding system

Hermaphrodite, testicle is on the outer peripheral of ventral ridge. Ovary is in the inner side of the testicle.

4. Growth and breeding characteristics

4.1 Growth

Under proper growth conditions, the average shell length of 8 months bay scallops can be 5cm, life span is 12months-16months.

4.2 Breeding characteristics

Spring and autumn are the two breeding seasons in the year. In the yellow sea area, the spring breeding period is from late May to June, autumn period is from September to October. Bay scallop has strong breeding ability. A matured bay scallop of shell length above 5cm can breed 50*10^4 - 60*10^4 pellets. A seasonal breeding number is 150*10^4 - 200*10^4.

5. Cell genetics characteristics

Chromosome of body cell diploid number, 2n = 32,

karyotype equation: 2n = 2sm + 12st + 18t, NF=34.

Where, central submetacentric chromosome (sm) 1pair, second central submetacentric chromosome (st) 6 pairs, end submetacentric chromosome (t) 9 pairs. Chromosome arm number (NF) 34 (referring to Figure 2).

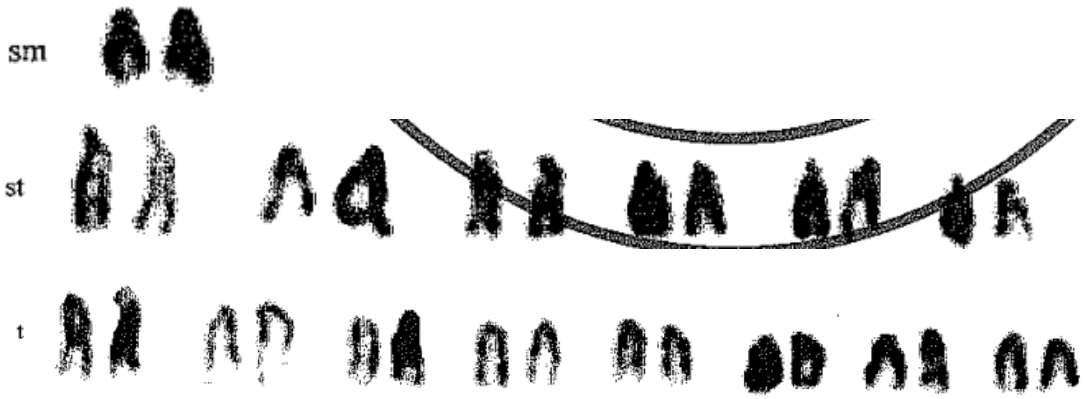


Figure 2: Bay Scallop Chromosome Idiogram

6. Biochemical genetics characteristics

The malic dehydrogenase (MDH) in the mascle is singlet state. The zymogram refers to Figure 3.

Figure 3 The malic dehydrogenase (MDH) zymogram

7. Molecular genetics characteristics

16Sr DNA code (547bp): 5'-3'

8. Inspection Methods

8.1 Chromosome and karyotype test

8.1.1 The preparation of chromosome samples

a) Take the live gill organ of bay scallop, put into the liquid which contains 0.04% of colchicine for 15-40 minutes;

b) Take it out and put into the sea water which contains 25% of hypotension for 40-50 minutes;

c) Remove it from the container and add carnoy's stationary liquid four times at 15 minutes each time to stabilize it.

d) After stabling, store it in the refrigerator with temperature ranging 0-4℃through the night;

e) Take it out of the refrigerator, drip the solution 20-30cm away from the glass when the glass temperature is 56-60℃

f) Dye in the liquid which contains 10% of Giemsa for 10-20 min (the preparation of Giemsa liquid refers to appendix A);

g) Wash under running tap and observe under the microscope.

8.1.2 Chromosome count

Under the microscope, count 100 clear and well-dispersed metaphase. Count the chromosome number and the diploid chromosome number.

8.1.3 Karyotype analysis

Take out 7-10 pairs chromosome split phase, take photo, magnify it, measure the length of chromosome, long arm and short arm, account is relative length, arm percentage, arm index, centromere index. Based on the diploid chromosome relative length, arm percentage and centromere index, refer to the classification standard of Levan, get the karyotype formula of diploid chromosome.

8.2 Isozyme analysis

8.2.1 Preparation of sample crystal

Dissect the live sample and take 0.1 g-0.2g of adductor muscle, add Tris-HCl buffer solution (0.01 mol/L, pH=7.0) and some properly treated silica sand, then have ice slurry, keep it in 4℃, centrifuge with the speed of 12 000 r/min for 20 minutes, take the clear liquid, separately store for electrophoresis.

8.2.2 Electrophoresis method

Take starch gel TC buffering system Tris-citric acid, pH=6.9 for electrophoresis analysis. The gel density is 13% (mass fraction), put the sample on the cathode when the gel is ready, and dip the sample liquid in the hole by filter paper. Electrophoresis should be done in the 4℃ container with 120v voltage, electric current 22 mA/board (TC). Dye after the electrophoresis, refer to appendix B for the dye liquid formula.

8.3 DNA character notational analysis

8.3.1 DNA extract

Cut the 300 mg of adductor muscle into pieces, add 600ul lysis buffer, 55℃ water bath and digest until the organ and pieces are completely resolved. Lysis buffer is separately extracted from Tris. Tris: trichloromethane(1:1), trichloromethane: isoamylol (24:1), add two portion of absolute ethyl alcohol and sodium acetate of 10% density ,centrifuge and deposit the DNA, finally wash by the 70% B enzyme ,dry it. For Lysis buffer formula refer to appendix C.

8.3.2 Fragment cloning and purifying

Use the extracted DNA as model, and two special amplification primers to conduct PCR amplification.

8.3.2.1 Primer sequence

f:5'-CGCCTGTTTATCAAAAACAT-3' r;5'-CCGGTCTGAACTCAGATCACGT-3'

8.3.2.2 Reaction condition

The process of reaction condition is as follows denaturation at 94℃ for 2minutes with 1 circulation; 94℃ denaturation for 30 seconds, 55℃ away from heating for 1 minute; 72℃ extension for 1minute, 35 circulations; 72℃ extension for 10 minutes, 1 circulation. Reaction. Reaction liquid formula refers to appendix C.

8.3.3 Sequence determination

Use gene automatic analyzer to have sequencing, the reaction process complies with the operation requirements set by the DNA Sequencing Kit specifications. Read out the sequence of 16Sr DNA.

Appendix A

(Normative Appendix)

The preparation of Giemsa liquid

A. 1 The preparation of Giemsa liquid

Weigh and take 0.5g Giemsa powder, 33ml glycerinum, add a little glycerinum and Giemsa powder in the mortar mix them, ensure that there are no particles in the mixture. Add the remaining glycerinum, store it at 56℃for 2 hours. Then add 33ml methyl alcohol, stir thoroughly, and keep it in the brown bottle.

A. 2 The preparation of phosphate buffer（0.2 mol/l, PH7. 2）

Phosphate buffer is the mixture of liquid A and B in different proportion.

Liquid A (0.2 mol/L, Na2HPO4) preparation:

Dissolve 36.61g of disodium hydrogen phosphate that contains one crystalline (Na2HPO4·H20), into 1000ml of distilled water, or dissolve 71.64g of disodium hydrogen phosphate that contains two crystalline （Na2HPO4·2H20), into 1000ml of distilled water.

Liquid B (0.2 mol/L, NaH2PO2) preparation:

Dissolve 27.6g of disodium hydrogen phosphate that contains one crystalline (NaH2PO4·H20), into 1000ml of distilled water, or dissolve 31.21g of disodium hydrogen phosphate that contains two crystalline (NaH2PO4·2H20), into 1000ml of distilled water.

A. 3 The preparation of Giemsa working dying liquid

Add 3ml of Giemsa dyeing original liquid into 100ml of phosphate buffer.

Appendix B

(Normative Document)

Isozyme dyeing liquid formula

Malic dehydrogenase（MDH),DL—sodium malate,392 mg; 0. 1 mol/L Tris-HCI buffer （ pH 8.0), 2ml; 1. 15 mol/L MgCl, + 0. 05 mol/L NaCl, 0.4 mL; MTT (thiazole salt), 4 mg; PMS(N—methyl phenazine methyl sulfate), 2.5mg；coenzyme,5mg.

Appendix C

(Normative document)

DNA extraction of pyrolysis liquid and PCR amplification reaction liquid constitution

C. 1 DNA extraction of pyrolysis liquid

HB (lo mmol/L Tris HCl, pH 8.O; 100 mmol/L EDTA)	540μl
SDS (sodium dodecyl sulfate) (10 %)	60μl
Protease k	100μl

C.2 PCR amplification reaction liquid

DNA model	150ng-200ng
Ten times amplification buffer	2.5μl
MgCI, (25 mmol/L)	2.0μl
dNTP(10 mmol/L)	0.5μl
Primer f (50 pmol/μL)	0.5μl
Primer r (50 pmol/μL)	0.5μl
Taq enzyme（5 U/ μL)	0.2μl

Add ultrapure water to make out the 25μl reaction system.

National Standards of People's Republic of China

GB/T 23497-2009

Shredded Squid

Issued on 2009-04-27 Implemented on: 2009-12-01

Issued by General Administration of Qualify Supervision, Inspection and Quarantine of the People's Republic of China & Standardization Administration of China

Foreword

This standard has been set up by National Food Industry Standardization Technical Committee

This standard has been put under centralized management of the Aquatic Product Processing Sub-branch Technical Committee of NFISTC

This standard has been drafted by China Aquatic Product Zhoushan Ocean Fishing Company and Li Yawen, Rong Suhong, Chen Yunyun, Zhuang Zhonghua and Huang Heyong.

Shredded Squid

1. Scope

This standard stipulates the classification and requirements, experimental methods, inspection rules，requirements for labels, packaging, storage and transportation as to shredded squid products.

This standard is applicable to skinned, roasted, smoked, flavored and other shredded squid products which are made of fresh, frozen squids that are processed, boiled, seasoned, dried, cooked or drawn into wires.

2. Normative reference

Terms in the following document have become terms of this standard due to the quotation of this standard. None of the following modification lists (exclusive of the corrigendum) or revised edition in any dated reference document is not applicable to this standard. All parties who have come to an agreement according to this standard, however, are encouraged to study whether the latest versions of these documents can be used. All latest versions of reference documents without dates are applicable to this standard.

GB 317 White granulated sugar

GB 2733 Hygienic standard for fresh and frozen animal aquatic products

GB 2760 Hygienic standard for the usage of food additives

GB 2762 Limited quantity of contaminants in food

GB/T 4789.2 Microbiological test in food hygiene test of aerobic bacterial count

GB/T 4789.3 Microbiological test in food hygiene coli count

GB/T 4789.4 Microbiological test in food hygiene test of salmonella

GB/T 4789.7 Microbiological test in food hygiene test of vibrio parahemolyticus

GB/T 4789.10 Microbiological test in food hygiene test of staphylococcus aureus

GB/T 4789.30 Microbiological test in food hygiene test of listeria monocytogenes

GB/T 5009.3 Moisture determination in food

GB/T 5009.11 Test of total arsenic and inorganic arsenic in food

GB/T 5009.12 Test of lead in food

GB/T 5009.27 Test of benzo a-pyrene in food

GB/T 5009.34 Test of sulphite in food

GB 5461 Edible salt

GB 5749 Hygienic standard for drinking water

GB 6388 Labels for reception and dispatch on transport packages

GB/T 6543 Single and double corrugated cartons used as transport packages

GB 7718 General rule for tags on prepackaged food

GB/T 8967 Sodium glutamate

GB 10144 Hygienic standard for dry animal aquatic products

GB/T 15691 General technical specification for spices and condiments

JJF 1070 Variable inspection rules for the net weight of quantitative packaging products

SC/T 3009 Quality management practices of aquatic product processing

SC/T 3011 Salinity measurement in aquatic products

SC/T 3016 Sampling method of aquatic products

Order No. 75(2005) issued by General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China

The metrological supervision and management methods for quantitative packaging products

Order No. 102 (2007) issued by General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China

Administrative provisions of food labeling

3. Product classification

The products can be classified into the following types in terms of different processing crafts.

3.1 Skinned shredded squid

Shredded squid products which are made of fresh, frozen squids that are rinsed, skinned, boiled, seasoned, dried, roasted or drawn into wires.

3.2 Roasted shredded squid

Shredded squid products which are made of fresh, frozen squids that are rinsed, boiled, seasoned, dried, roasted or drawn into wires.

3.3 Smoked shredded squid

Shredded squid products which are made of fresh or frozen squids that are rinsed, skinned (or not) boiled, seasoned, dried, roasted or drawn into wires.

3.4 Flavored shredded squid

Shredded squid products that are made with relevant processes except for 3.1, 3.2 and 3.3 by adding various condiments.

4. Requirements

4.1 Raw and supplemental materials

4.1.1 Raw materials: the fresh, frozen squids shall be compliant with GB 2733

4.1.2 White granulated sugar shall be compliant with GB 317

4.1.3 Edible salt shall be compliant with GB 5461

4.1.4 Monosodium glutamate shall be compliant with GB/T 8967

4.1.5 The spice shall be compliant with GB/T 15691

4.1.6 Production water shall be compliant with GB 5749

4.1.7 Types and dosage of food additives shall be compliant with GB 2760

4.1.8 Other auxiliary materials shall be compliant with relevant standards and requirements.

4.2 Processing

Processing shall be compliant with SC/T 3009

4.3 Sensory requirements

See the sensory requirements in Table 1

Table 1 Sensory requirements

Items	Requirements			
	Skinned shredded squid	Roasted shredded squid	Smoked shredded squid	Flavored shredded squid
Appearance	The packaging bags shall be intact without being damaged; the seal shall be tight and orderly; the products shall be in good shape without mildew.			
Colors	White or light yellow with uniform gloss	Brown with uniform gloss	Yellow or tawny with uniform gloss	Natural color with uniform gloss when auxiliary materials or food additives are added
Forms	Strand-shaped with moderately compact textures			
Taste and smell	Tasty and pure-flavored with its original smell but no off-flavor			
Impurities	With no exogenous impurities			

4.4 Net content

It shall be compliant with the regulations of the metrological supervision and management methods for quantitative packaging products

4.5 Physicochemical indexes

See the physicochemical indexes in Table 2

Table 2 Physicochemical indexes

Items	Indexes
Chipping[a] percentage Net content < 500 g ≤ Net content 500g ~1,000g ≤ Net content≥1,000g ≤	 1 2 3
Moisture percentage	22~30
Salinity percentage (in terms of NaCl)	2~8
Lead(in terms of PB)/(mg/kg)	Compliant with GB 10144
Inorganic arsenic/(mg/kg)	
Nitrite（in terms of SO_2）(mg/kg) ≤	30
Benzo a-pyrene[c](μg/kg)	Compliant with GB 2762
a Not applicable to flavored shredded squid b Only applicable to skinned shredded squid c Only applicable to smoked shredded squid	

4.6 Microbiological indicators

See the microbiological indicators in Table 3

Table 3 Microbiological indicators

Items	Indicators
Aerobic bacterial count/(CFU/g)	Compliant with GB 10144
Coli group/(MPN/100g)	
Pathogenic bacteria(salmonella, vibrio parahemolyticus, staphylococcus aureus and listeriosis)	

5. Test methods

5.1 Sensory testing

Samples shall be spread in a white enamel plate and, in a hygienic environment where there is sufficient sunshine but no odor, be tested with sensory organs including the eyes, nose, mouth and hands in accordance with 4.3.

5.2 Test of net content

It shall be performed in accordance with JJF 1070.

5.3 Physical and chemical inspection

5.3.1 Chipping percentage

5.3.1.1 Tools for testing

a) Electronic scales: maximum capacity: 1000g; sense quantity: 0.01g

b) Mesh screen: stainless steel mesh screens with their mesh diameter of 2.5mm that are made of stainless steel wires whose diameters range from 0.5mm to 1mm.

5.3.1.2 Chipping extraction

Choose individual sales packages from the samples at random. Open the packages and weigh the samples. Place an appropriate amount of the weighed sample on the mesh screens to get the intact products. Then shake the screen to and fro for 3 to 5 minutes till the chipping falls into the container.

5.3.1.3 Calculation of chipping percentage (p)

To weigh the chipping with electronic scales and calculate the chipping percentage with the Formula (1)

$$P=m_o/m\times100 \qquad \text{.....(1)}$$

In the formula:

p—chipping percentage

m_o—chipping weight (unit : gram)

m—sample weight (unit : gram)

5.3.2 Moisture

To be performed in accordance with GB/T 5009.3

5.3.3 Salinity

To be performed in accordance with SC/T 3011

5.3.4 Inorganic arsenic

To be performed in accordance with GB/T 5009.11

5.3.5 Lead

To be performed in accordance with GB/T 5009.12

5.3.6 Nitrite

To be performed in accordance with GB/T 5009.34

5.3.7 Benzo a-pyrene

To be performed in accordance with GB/T 5009.27

5.4 Test of microorganism

5.4.1 Aerobic bacterial count

To be performed in accordance with GB/T 4789.2

5.4.2 Coli group

To be performed in accordance with GB/T 4789.3

5.4.3 Salmonella

To be performed in accordance with GB/T 4789.4

5.4.4 Vibrio parahemolyticus

To be performed in accordance with GB/T 4789.7

5.4.5 Staphylococcus aureus

To be performed in accordance with GB/T 4789.10

5.4.6 Listeriosis

To be performed in accordance with GB/T 4789.30

6. Inspection rules

6.1 Lot grouping rules and sampling methods

6.1.1 Lot grouping rules

6.1.1.1 The same types with the same raw material source, which come from the same production line and are produced on the same day, can be classified into a group.

6.1.1.2 When the production is instable or the batch is oversized, the products can be divided into several groups.

6.1.2 Sampling methods

6.1.2.1 Sensory, net content and physicochemical indexes: to be performed in accordance with SC/T 3016.

6.1.2.2 Microbiological indicator: Choose three boxes among the submitted products at random. Choose 1 to 3 intact product packages from every box and pick out 250g or more of the sample as the test specimen for the microbiological indicators.

6.1.2.3 The samples for sensory, physicochemical and microbiological indicator test shall be divided into two groups, one for test and the other for reserve.

6.2 Inspection classification

The product inspection can be divided into delivery inspection and type inspection.

6.2.1 Delivery inspection

6.2.1.1 Before being delivered, every group of products shall be examined and issued an inspection certificate by the quality test department of the manufacturer in accordance with the standard code. They shall be allowed to be stored or delivered with such a certificate.

6.2.1.2 Delivery inspection items：sensory and net content indexes, chipping percentage, moisture, salinity, aerobic bacterial count and coli group.

6.2.2 Type inspection

6.2.2.1 It shall be carried out on regular production every 6 months, or at the following situations:

a) When production is resumed after a half-year equipment replacement or shutdown

b) When great changes to raw materials or manufacturing techniques may impact the product quality

c) When the quality supervision organization requires a type inspection

d) When great differences exist between delivery inspection results and those of the last type inspection

6.2.2.2 Items of type inspection

Content required in Table 1, Table 2, Table 3 and 7.1

6.3 Decision rules

6.3.1 This group of products can be seen as qualified products when all the inspection items comply with this standard.

6.3.2 Except for microbiological indicators, if any one of the inspection items doesn't meet the requirement, one more sampling retest shall be done and be seen as the criterion. Products that fail to meet the requirement again after the retest shall be seen as disqualified products.

6.3.3 Products that fail to pass any of the microbiological indicator tests shall be seen as disqualified ones.

7. Labels, packages, storage and transportation

7.1 Labels

7.1.1 Labels for product sales shall be compliant with GB 7718 and the regulations of food labeling administrative regulations.

7.1.2 Labels for transport packages shall be compliant with GB/T 6388.

7.2 Packaging

7.2.1 Packing materials

7.2.1.1 Sales packages shall meet the hygiene standard requirements for food packaging so as to ensure the product quality safety.

7.2.1.2 Transport packages shall be corrugated cartons that comply with GB/T 6543.

7.2.1.3 All the packing materials shall comply with relevant hygienic standards and operating requirements.

7.2.2 Packaging requirements

7.2.2.1 Sales packages: with intact seals to avoid air leakage

7.2.2.2 Transport packages: the tops and bottoms shall be completely sealed with carton sealing tapes to make the boxes flat and secure.

7.2.2.3 An appropriate amount of products shall be orderly grouped into one carton with the corresponding qualification certificates.

7.3 Storage

7.3.1 The storage warehouse shall be clean, dry, cool, airy and inaccessible to rats or insects. Cryogenic equipment shall be available for the products which need storing in low temperature. Records on the temperature and moisture shall be available.

7.3.2 Products at the bottom shall be placed on shelves to keep them over 10cm away from the floor and more than 20 cm from the wall. Stacking heights shall be subject to the extent where cartons are not deformed due to pressure.

7.3.3 Products shall not be stored together with poisonous, hazard, odorous, easy-deteriorating or damp products in the same warehouse.

7.4 Transportation

Products shall be delivered with transportation vehicles. Exposure to the sun and rain shall be avoided during the transportation. They shall not be close to or contacted with damp, corrosive, hazard and poisonous products.

National Standards of People's Republic of China

GB/T 30984-2014

Salted Fish

Issued on 2014-09-30 Implemented on: 2015-03-01

Issued by General Administration of Qualify Supervision, Inspection and Quarantine of the People's Republic of China & Standardization Administration of China

Foreword

This standard has been drafted in accordance with the regulations given by GB/T 1.1—2009.

This standard has been set up by the Ministry of Agriculture of the People's Republic of China.

This standard has been put under centralized management of the Aquatic Product Processing Sub-branch Technical Committee of the National Aquatic Product Standardization Technical Committee (SAC/TC 156/SC 3).

This standard has been drafted by the South China Sea Fisheries Research Institute in Chinese Academy of Fishery Sciences and Yang Xianqing, Hao Shuxian, Li Laihao, Diao Shiqiang, Shi Hong, Cen Jianwei and Qi Bo.

Salted Fish

1. Scope

This standard stipulates the terms and definition of salted fish and the requirements, test methods, inspection rules, labels, packages, transportation and storage for it.

This standard is applicable to dry or half-dry salted fish products made of marine fish after being rinsed, salted and dried. Salted fish products that are made of freshwater fish shall be in accordance with this standard.

2. Normative reference

The following documents are indispensible to the application of this document. Only dated versions of the dated reference documents are applicable to this document. The latest versions of documents without dates, including all modification lists, are applicable to this document.

GB/T 191 Images and labels for packing, storage and transportation.

GB 2733 Hygienic standard for fresh and frozen animal aquatic products

GB 2760 National standard for food safety

Standard for the usage of food additives

GB/T 5009.3 National standard for food safety

Moisture determination in food

GB 5461 Edible salt

GB 7718 National standard for food safety

General rule for tags on prepackaged food

GB 10138 Hygienic standard for salted fish

GB/T 18108 Fresh marine fish

GB/T 18109 Frozen fish

GB 28050 National standard for food safety

General rule for prepackaged food nutrition labeling

GB/T 30891—2014 Sampling standard for aquatic products

JJF 1070 Inspection rule for the net content measurement of quantitative package goods

SC/T 3011 Measurement of salt in aquatic products

Notice 235 of Ministry of Agriculture

Limitation on residue of veterinary drugs in food of animal origin

3. Terms and definitions

All the following terms and definitions are applicable to this document.

3.1 Pink

Red specks on the surface of fish scales or bodies due to halophilic bacteria.

3.2 Dun

A color change on the fish surface due to mold

3.3 Burning

Extensive diffusion of oil and yellow discoloration on the fish surface due to oil oxidation

4. Requirements

4.1 Requirements for raw and supplemental materials

4.1.1 Raw materials

The fish raw materials shall comply with relevant regulations in GB 2733, GB/T 18108 and GB/T 18109.

4.1.2 Supplemental materials

Edible salt shall be in accordance with GB 5461. Types and dosage of food additives shall be in accordance with GB 2760. Other auxiliary materials shall be in accordance with relevant standards and requirements in China.

4.2 Sensory indexes

Sensory indexes shall be in accordance with Table 1.

Table 1 Sensory indexes

Items	Requirements
Appearance	With the original gloss characteristic of the salted fish but no mold, worm damage, pink, dun or burning, the fish surface shall not be sticky.
Flesh	Flesh fiber shall be distinct.
Smell	With the original smell characteristic of salt fish but no lipase taste or odor
Others	No distinct impurity or parasite on the fish surface, gill or abdomen

4.3 Physicochemical indexes

Physicochemical indexes shall be in accordance with the regulations in Table 2

Table 2 Physicochemical indexes

Items	Requirements	
Salinity percentage (in terms of NaCl)	High salinity	Low salinity
	>11	3 ~11
Moisture percentage(MP)	≤50	

4.4 Net content

Net content shall be in accordance with JJF 1070.

4.5 Safety index

The safety index shall be in accordance with GB 10138.

4.6 Residue of veterinary drugs

Limitation on residue of veterinary drugs shall be in accordance with the regulations in the Notice 235 of Ministry of Agriculture.

5. Test Methods

5.1 Sensory testing

Samples shall be placed in a white enamel plate or stainless steel work table for test in accordance with Table 1 in a hygienic environment where there is sufficient sunshine but no odor.

5.2 Moisture

To be tested in accordance with GB/T 5009.3

5.3 Salinity

To be tested in accordance with SC/T 3011

5.4 Net content

The salt and auxiliary materials on the fish surface shall be removed before the test, which shall be performed in accordance with JJF 1070.

5.5 Safety index

To be performed in accordance with GB 10138

5.6 Residue of veterinary drugs

To be performed in accordance with relevant method standards that have been released in China and applicable to residue of veterinary drugs in aquatic products.

6. Inspection rules

6.1 Lot grouping rules and sampling methods

6.1.1 Lot grouping rules

The same types of products produced on the same day or at the same group under basically-the-same production conditions can be classified into a group.

6.1.2 Sampling methods

To be performed in accordance with GB/T 30891-2014

6.2 Inspection classification

6.2.1 Product inspection

The product inspection can be divided into delivery inspection and type inspection.

6.2.2 Delivery inspection

Delivery inspection shall be performed on every group of products by the quality test department of the manufacturer. Inspection items shall include sensory test, salinity, moisture and net content. The products shall be issued inspection certificates with which they are allowed to be stored or delivered.

6.2.3 Type inspection

Under normal circumstances, it shall be carried out in every production cycle, or at the following situations (inspection items shall include all the items required in this standard):

a) When production is resumed after a half-year shutdown

b) When great changes to raw materials, processing techniques or production conditions may impact the product quality

c) When the administration department requires a type inspection

d) When great differences exist between delivery inspection result and that of the last type inspection

e) At least two inspections each year when regular production is performed

6.3 Decision rules

6.3.1 Inspection items in the sensory testing shall be in accordance with 4.2. If the amount of qualified samples is in accordance with Appendix A of GB/T 30891—2014, the products can be seen as qualified ones.

6.3.2 When net content is inspected, qualification evaluation of the results shall be in accordance with JJF 1070.

6.3.3 When the inspection results all meet the standard, products can be seen as qualified ones. If any one of the inspection items doesn't meet the requirement, one more sampling retest shall be done. If they still fail to pass the retest, they shall be seen as disqualified products. If two or more items fail to meet the

requirement, the products shall be also seen as disqualified ones.

7. Labels, packages, storage and transportation

7.1 Labels

Product labels shall comply with GB 7718 and nutrition labels shall comply with GB 28050. The labels shall be in accordance with GB/T 191.

7.2 Packaging

7.2.1 Packages shall be made of clean, non-poisonous, odor-free and firm materials and be in accordance with relevant requirements for food packaging materials in China.

7.2.2 Products shall be placed in order. Their packages shall bear certificates of quality. Products shall not be polluted during the packaging.

7.3 Transportation

Transportation vehicles shall be clean and sanitary. During the transportation, products shall avoid sunshine and rain. They shall not be delivered together with poisonous, hazard and odorous products.

7.4 Storage

The storage warehouse shall be clean, dry, cool, airy, hygienic and inaccessible to rats or insects. High-salt fish shall be stored below 6°C while it is recommended that low-salt fish be stored in a colder environment. They shall not be stored together with poisonous, hazard, odorous, volatile and corrosive products.