

## Standards for fish and fishery products

The standards for fish and fishery products are formulated with a aim to attain a minimum standard of cleanliness and hygiene in handling, processing and marketing of fish. These standards are also intended to guide and promote export or import of fishery products between countries.

### Types of standards for fish and fishery products

Standards for fish and fishery products are groped in to 2 types;

#### 1. Safety standards

Safety standards are those standards that help to protect the consumers' health against damaging effect of food. Adherence to these standards involves adopting reasonable standards of hygiene, control on use of additives and prevention of contaminants thereby ensuring the fish and fishery products free from pathogens.

#### 2. Composition standards

Composition standards help in protecting the consumer against any fraud by ensuring unadulterated, pure and of good quality fish and fishery products. Packages should contain the correct description, labeling, weights, etc

Several national and international standards and codes of practices that have been established for a variety of food products are successful in ensuring availability of a good quality and safe products in the market. The quality standards established for fish and fishery products can be broadly categorized in to national standards and international standards.

#### National standards

Many fish producing countries have established their own standards and codes of practice for fishery products. These national standards govern the quality and standards of fish and fishery products meant for local consumption as well as for export and import. Some of the national standards are; Bureau of Indian Standards (BIS), British Standards (BS), United States Food and Drug Administration (USFDA), etc

##### 9.3.2. Bureau of Indian Standards (BIS)

The Bureau of Indian Standards (BIS), formerly called as Indian Standards Institution, was established in 1947 and is the national organization in India for food standards. The principal objective of BIS is to prepare standards on national basis and promote their adoption. The bureau has established over fifty standards for various fish and fishery products such as fresh fish, frozen fish and dried and cured products giving detailed information on requirements of processing, packaging, and methods of analysis for evaluation of quality.

##### 9.3.2.a. BIS standards for fresh and frozen fish and shellfish

Sl. No.	Name of specification	Specification Number &Year of publication
<b>Fresh Fish</b>		
1	Fresh silver pomfret and brown pomfret	IS 4780 - 1968
2	Fresh threadfin	IS 4781 - 1968
3	Mackerel, fresh	IS 6032 - 1971
4	Seerfish (Scomberomorus spp.),	IS 6123 - 1971
<b>Frozen fish and shellfish</b>		

5	Frozen prawns (shrimp) - second revision	IS 2237 - 1985
6	Frozen froglegs	IS 2885 - 1964
7	Frozen lobster tails	IS 3892 - 1966
8	Frozen threadfin	IS 4796 - 1968
9	Frozen silver pomfrets and brown pomfrets	IS 4793 - 1968
10	Mackerel, frozen	IS 6033 - 1971
11	Seerfish ( <i>Scomberomorus</i> spp.), frozen	IS 6122 - 1971
12	Frozen cuttlefish and squid	IS 8076 - 1976
13	Frozen minced fish meat	IS 10763 - 1983

#### 9.3.2.b. BIS standards for canned fish and shellfish

Sl. No	Name of specification	Specification Number &Year of publication
1	Pomfret canned in oil (first revision)	IS 2168 - 1971
2	Prawns (shrimp) canned in brine (first revision)	IS 2236 - 1968
3	Mackerel ( <i>Rastrelliger</i> spp.) canned in oil (second revision)	IS 2420 - 1985
4	Mackerel ( <i>Rastrelliger</i> spp.) canned in brine	IS 3849 - 1966
5	Sardines ( <i>Sardinella</i> spp.) canned in oil (first revision)	IS 2421 - 1971
6	Sardines ( <i>Sardinella</i> spp.) canned in brine and in their juice	IS 6677 - 1972
7	<i>Lactarius</i> spp. canned in oil (first revision)	IS 6121 - 1985
8	Tuna canned in oil	IS 4304 - 1967
9	Crabmeat, canned in brine	IS 7143 - 1973
10	Crabmeat solid packed	IS 7582 - 1975
11	Mackerel canned in curry	IS 9312 - 1979
12	Specification for mussel canned in oil	IS 10760 - 1983

#### 9.3.2.c. BIS standards for dried fish and shell fish

Sl. No	Name of specification	Specification Number &Year of publication
1	Dried prawns (second revision)	IS 2345 - 1985
2	Dried and laminated Bombay duck	IS 2884 - 1964
3	Dried white baits ( <i>Anchoviella</i> spp.)	IS 2883 - 1985
4	Dry salted mackerel	IS 4302 - 1967
5	Dry salted seerfish (first revision)	IS 5198 - 1985
6	Dry salted shark (first revision)	IS 5199 - 1985
7	Dry salted surai (Tuna) (first revision)	IS 5736 - 1985
8	Dry salted threadfin (Dara) and dry salted Jew fish (Ghol) first revision)	IS 3850 - 1973
9	Dry salted cat fish	IS 3851 - 1966

11	Dry salted horse mackerel ( <i>Caranx</i> spp.)	IS 3852 - 1985
12	Dry shark fin	IS 5471 - 1969
13	Fish maws (first revision)	IS 5472 - 1985
14	Dry salted dhoma (first revision)	IS 8836 - 1985

#### 9.3.2.d. BIS standards for miscellaneous products and fisheries related aspects

Sl. No	Name of specification	Specification Number & Year of publication
1	Code for hygienic conditions for fish industry Part I: Pre-processing stage (first revision)	IS 4303 - 1975
2	Code of hygienic conditions for fish industry Part II: Canning stage (first revision)	IS 4303 - 1975
3	Recommendation for maintenance of cleanliness in fish industry	IS 5375 - 1970
4	Fish meal as livestock feed (first revision)	IS 4307 - 1973
5	Shark liver oil for veterinary use	IS 3336 - 1965
6	Sardine oil	IS 5734 - 1970
7	Glossary of important fish species of India	IS 7313 - 1974
8	Basic requirements for fresh fish stalls	IS 7581 - 1975
9	Basic requirements for fish market	IS 8082 - 1976
10	Procedure for checking temperature of quick frozen foods	IS 8077 - 1976
11	Methods for sampling fish and fishery products	IS 11427 - 1985

#### 9.3.2.e. Microbiological requirements for fresh and frozen fish and shellfish (Bacterial count maximum / g)

Sl. No.	Name of fish / shellfish	Fresh / Frozen	SPC (Standard plate count)	<i>E. coli</i>	Coagulase positive Staphylococci	Faecal Streptococci	<i>Salmonella</i>
1	Mackerel	Fresh	1,00,000	20	--	--	Nil
2	Threadfin	Fresh	1,00,000	20	--	--	Nil
3	Pomfrets	Fresh	1,00,000	20	--	--	Nil
4	Mackerel	Frozen	1,00,000	10	--	--	Nil
5	Threadfin	Frozen	1,00,000	10	--	--	Nil
6	Pomfrets	Frozen	1,00,000	10	--	--	Nil
7	Seer fish	Frozen	1,00,000	10	--	--	Nil
8	Lobster tails	Frozen	5,00,000	20	100	--	Nil
9	Prawns (Whole & headless)	Frozen	5,00,000	20	100	100	Nil
10	Prawns (Peeled & deveined)	Frozen	10,00,000	20	100	100	Nil
11	Prawns (cooked)	Frozen	1,00,000	Nil	100	100	Nil
12	Cuttlefish	Frozen	1,00,000	10	100	--	Nil

**9.3.2.f. Standards for water used in food processing industry (as per IS 4251) and ice manufacture (as per IS 3957)**

Sl.No	Characteristics	Tolerance	
		Food Industry	Ice Manufacture
1	Colour (Hazen units), Max	20	5
2	Turbidity (Units), Max	10	5
3	Odour	None	None
4	pH	6.5 to 9.2	6.5 to 9.2
5	Total dissolved solids, mg / L, Max.	1000	1000
6	Alkalinity (as CaCO <sub>3</sub> ), mg / L. Max.	--	100
7	Total hardness (as CaCO <sub>3</sub> ), mg / L.Max	600	600
8	Sulphate (as SO <sub>4</sub> ), mg / L. Max.	200	200
9	Fluoride (as F), mg / L. Max.	1.5	1.5
10	Chloride (as Cl), mg / L. Max.	250	250
11	Cyanide (as CN), mg / L. Max.	0.01	0.01
12	Selenium (as Se), mg / L. Max.	0.05	0.05
13	Iron (as Fe), mg / L. Max.	0.3	0.3
14	Magnesium (as Mg), mg / L. Max.	75.0	125
15	Manganese (as Mn), mg / L. Max.	0.2	0.2
16	Copper (as Cu), mg / L. Max.	1.0	1.0
17	Lead (as Pb), mg / L. Max.	0.1	0.1
18	Chromium (as Cr <sup>+6</sup> ), mg / L. Max.	0.05	0.05
19	Zinc (as Zn), mg / L. Max.	15.0	15.0
20	Arsenic (as As), mg / L. Max.	0.2	0.2
21	Nitrate (as N), mg / L. Max.	20	--
22	Phenolic substances (as C <sub>6</sub> H <sub>5</sub> OH), mg /L. Max.	0.001	0.001

**9.3.3. Export Inspection Agency (EIA)**

Export Inspection agency (EIA) was established by the Govt. of India, under the Export (Quality Control & Inspection) Act of 1963 which came in to force from 1st January 1964, to create an image of quality for Indian goods in the foreign markets and to promote exports on a long term and permanent basis by launching a comprehensive programme of quality control and pre-shipment inspection.

This act empowered the Govt. of India to notify commodities, which shall be subject to compulsory quality control or inspection or both, before shipment. No consignment of the commodities so notified can be permitted for export unless a certificate or the article accompanies it or package carries a recognized mark indicating that it conforms to the recognized specifications.

Under this act, Export Inspection Council (EIC), a statutory body under the Ministry of Commerce was established to advise the Government with regard to measures to be taken for quality control and pre-shipment of exportable commodities. For this purpose five Export Inspection Agencies (EIAs) with several sub-offices covering entire India were established

under the administrative and technical control of EIC.

#### **9.3.4. Quality control and pre-shipment inspection of fish and fishery products**

The EIA is responsible for quality control and pre-shipment inspection of all kinds of fish and fishery products meant for export. The scheme of quality control and inspection system followed for fish and fishery products included,

- Consignment-wise (end product) inspection
- In-process quality control (IPQC)
- Modified in-process quality control (MIPQC)
- Self-certification and voluntary inspection

##### **a. Consignment-wise inspection**

This is a system of end product inspection for quality standards. This involves inspection of the final products by drawing and inspection of random samples to ensure conformity of the product to the prescribed standard specifications.

This approach to quality control was in force in the beginning of the establishment of EIA, however, dried fishery products are still inspected under this system.

##### **b. In-process quality control (IPQC)**

IPQC scheme introduced by Govt of India is in force since January 1, 1973 for processed fish and fishery products through the meaningful and effective implementation of quality control and inspection (QC&I) scheme. Under this scheme the EIA approved processing units have to fulfill minimum sanitary and hygienic facilities stipulated in Quality Control & Inspection rules and only such units are permitted to process and export fish and fishery products. The quality inspection conducted by the processing units is counterchecked by the Officer of EIA. The final product is further subjected to physical, organoleptic and bacteriological examinations and certified by EIA for export

Thus, IPQC scheme involves continuous surveillance and vigil by EIA Officers during the entire processing and packing operations starting with the receipt of the raw material till the final product is exported. This scheme was subsequently renamed in 1987 as Quality Control and Inspection in Approved Units (QCIA).

##### **c. Modified in-process quality control (MIPQC)**

MIPQC system was introduced in the processing units which have been accorded approval to process fishery products under the IPQC scheme but have certain additional infrastructural facilities like testing laboratory to ensure production of bacteriologically and organoleptically sound products for export. Such units under the MIPQC system are permitted to process and pack fish and fishery products for export under their own supervision and control by adopting in-process quality control measures, bacteriological examination of raw material and final product, and organoleptical examination of the final product.

The EIA mainly assists and guides the processors in producing wholesome and quality products. Under this scheme the processors themselves are responsible for ensuring the quality of the product for export but the inspection certificates are being issued by EIA. This scheme was later referred to as In-Process Quality Control (IPQC) in 1987.

##### **d. Self-certification scheme (SCS)**

Under this scheme the processing units are bestowed with the responsibility of ensuring the quality of their products as required by law and also to act as Inspection Agency to certify the product for export. Only such processing units

that have performed well without any problems and rejections under IPQC scheme for a stipulated period are only considered eligible for self-certification scheme. Those processing units which have all required infrastructural facilities, strict quality control system, regular quality auditing programme and established reputation qualify for SCS.

**e. Voluntary pre-shipment inspection**

Voluntary pre-shipment inspection is performed for the benefit of foreign buyers in respect of products which have not been brought under the purview of compulsory pre-shipment inspection.

**f. EU approval**

Export of seafoods not meeting the quality norms with respect to pathogens resulted in the ban on import by European union (EU) in 1999. Then, the Govt. of India through the bilateral negotiations adopted a new system of approving the seafood processing units exporting to EU countries as per EU norms 91/493/EEC. Under this scheme, all the EU approved units are monitored by a team of experts (Supervisory Audit Team) and inspected once in 2 months. As per the system, the processing units should have excellent hygienic facilities for pre-processing and processing, ice production, cold storage, water purification system, etc. The processing units should also implement the SSOP, GMP and HACCP with all relevant documents and monitoring procedures. The processing plants which are not qualified for EU approval are approved by EIA for exporting seafood to non-European countries.