

Notice calling for claims, suggestions, views, comments etc from stakeholders within a period of 30 days on the draft notification related to Vertical Standards of Fish and Fish Products.

1. **F.No.1-10(8)/standards/SP(Fish and Fisheries Products)/FSSAI-2013.-** In the Food Safety and Standards (Food Products Standards and Food Additives) Regulations, 2011, in regulation 2.6 relating to “Fish and Fish Products”, in sub-regulation 2.6.1,-

(A) for clause 1, the following shall be substituted, namely:-

“1. Frozen Shrimp

(a) Frozen Shrimp means the product frozen raw or partially or fully cooked shrimps or prawns, peeled or unpeeled.

(b) Frozen shrimp is the product obtained from species belonging to Penaeidae, Solenoceridae, Aristeidae, Sergestidae, Hippolytidae, Crangonidae, Palaemonidae and Atyidae. The product after any suitable preparation shall be subjected to a freezing process and shall comply with the conditions laid down hereafter:

- (i) The freezing process shall be carried out in appropriate equipment in such a way that the range of temperature of maximum crystallization is passed quickly. The freezing process shall not be regarded as complete unless and until the product temperatures has reached -18°C or lower at the thermal centre after thermal stabilisation.
- (ii) The water used for cooking and cooling shall be of potable quality or clean seawater, which meets the same microbiological standards as potable water and is free from potential contaminants.
- (iii) The product shall be kept deep frozen so as to maintain the quality during transportation, storage and distribution.
- (iv) Frozen shrimps shall be processed and packaged so as to minimise dehydration and oxidation.
- (v) The recognised practice of repacking frozen products under controlled conditions which will maintain the quality of the product, followed by the reapplication of the freezing process as defined, is permitted.

(c) Requirements

- (i) Frozen shrimp shall be prepared from sound shrimps or prawns which are of a quality fit to be sold fresh for human consumption.
- (ii) If glazed, the water used for glazing or preparing glazing solutions shall be of potable quality (IS 10500) or shall be clean sea-water, which meets the same

microbiological standards as potable water and is free from potential contaminants.

- (iii) Other ingredients shall be of food grade quality and conform to all applicable standards prescribed in these regulations.

(d) Food Additives

Only the food additives permitted under these regulations shall be used.

(e) Hygiene

The product shall be prepared and handled in accordance with the guidelines provided in part-II of Schedule 4 of the Food Safety and Standards (Licensing and Regulation of Food Businesses) Regulations, 2011 and any other such guidance provided from time to time under the provisions of the Food Safety and Standard Act, 2006.

(f) Contaminants, Toxins and Residues

The products covered in this standard shall comply with the Food Safety and Standards (Contaminants, Toxins and Residues) Regulations, 2011.

The products covered in this standard shall conform to the microbiological requirements as given in Appendix B of these regulations.

(g) Packaging and Labelling

The products shall comply with the packaging and labelling requirements as laid down under the Food Safety and Standards (Packaging and Labelling), Regulations, 2011 and shall apply to the pre-packaged product. The product shall be stored at -18°C or lower and shall be declared on the label.”;

- (B) for clauses 4 and 5, the following clauses shall be substituted, namely:-

“4. Frozen finfish

(a) Frozen finfish means the product frozen finfish species as defined below and offered for direct consumption and for further processing.

(b) Frozen finfish refers to finfish species suitable for human consumption, with or without the head, from which the viscera or other organs may have been completely or partially removed. The product after any suitable preparation shall be subjected to a freezing process and shall comply with the conditions laid down hereafter:

- (i) The freezing process shall be carried out in appropriate equipment in such a way that the range of temperature of maximum crystallization is passed quickly. The freezing process shall not be regarded as complete unless and until the product temperature has reached -18°C or lowers at the thermal

centre after thermal stabilization. The product shall be kept deep frozen so as to maintain the quality during transportation, storage and distribution.

- (ii) These products shall be processed and packaged so as to minimize dehydration and oxidation.
- (iii) The recognized practice of repacking frozen products under controlled conditions which will maintain the quality of the product, followed by the reapplication of the freezing process as defined above is permitted.

(c) Requirements

- (i) Frozen finfish shall be prepared from sound fish which are of a quality fit to be sold fresh for human consumption.
- (ii) If glazed, the water used for glazing or preparing glazing solutions shall be of potable quality (IS 10500: 2012) or shall be clean sea-water, which meets the same microbiological standards as potable water and is free from potential contaminants.
- (iii) Other ingredients shall be of food grade quality and conform to all applicable standards prescribed in these regulations.
- (iv) The raw material shall not contain more than 100 mg/Kg of histamine. This shall only apply to species of Carangidae, Chanidae, Clupeidae, Coryphaenidae, Engraulidae, Istiophoridae, Mugilidae, Pristigasteridae, Scombridae and Xiphiidae.

(d) Food Additives

Only the food additives permitted under these shall be used.

(e) Hygiene

The product shall be prepared and handled in accordance with the guidelines provided in part-II of Schedule 4 of the Food Safety and Standards (Licensing and Regulation of Food Businesses) Regulations, 2011 and any other such guidance provided from time to time under the provisions of the Food Safety and Standard Act, 2006.

(f) Contaminants, Toxins and Residues

The products covered in this standard shall comply with Food Safety and Standards (Contaminants, Toxins and Residues) Regulations, 2011.

The products covered in this standard shall conform to the microbiological requirements as given in Appendix B of these regulations.

(g) Packaging and Labelling

The products shall comply with the packaging and labelling requirements as laid down under the Food Safety and Standards (Packaging and Labelling), Regulations, 2011, shall apply to the pre-packaged product. The product shall be stored at -18°C or lower and shall be declared on the label.

5. Frozen fish fillets

(a) Frozen fish fillets means the product frozen fillets of fish as defined below for direct consumption as well as for further processing.

(b) Frozen fillets are slices of fish which are removed from the carcass of the same species of fish suitable for human consumption by cuts made parallel to the backbone and sections of such fillets cut so as to facilitate packing, and further processing. The product after any suitable preparation shall be subjected to a freezing process and shall comply with the conditions below:

- (i) The freezing process shall be carried out in appropriate equipment in a way that the range of temperature of maximum crystallization is passed quickly. The freezing process shall not be regarded as complete unless and until the product temperature has reached -18°C or lower at the thermal centre after thermal stabilization. The product shall be kept deep frozen so as to maintain the quality during transportation, storage and distribution.
- (ii) These products shall be processed and packaged so as to minimize dehydration and oxidation.
- (iii) Repacking of the frozen products can be carried out under controlled conditions, which will maintain the quality of the product, followed by the reapplication of freezing process as mentioned above.
- (iv) Fillets may be presented as boneless, provided that boning has been completed including the removal of pin- bones.

(c) Requirements

- (i) Frozen fish fillets shall be prepared from sound fish which are of a quality fit to be sold fresh for human consumption.
- (ii) If glazed, the water used for glazing or preparing glazing solutions shall be of potable quality (IS 10500) or clean sea-water, which meets the same microbiological standards as potable water and is free from potential food contaminants.
- (iii) Other ingredients shall be of food grade quality and conform to all applicable standards prescribed in these regulations.
- (iv) The raw material shall not contain more than 100 mg/Kg of histamine. This shall only apply to species of Carangidae, Chanidae, Clupeidae,

Coryphaenidae, Engraulidae, Istiophoridae, Mugilidae, Pristigasteridae, Scombridae and Xiphiidae.

(d) Food Additives

Only the food additives permitted under these regulations shall be used.

(e) Hygiene

The product shall be prepared and handled in accordance with the guidelines provided in part-II of Schedule 4 of the Food Safety and Standards (Licensing and Regulation of Food Businesses) Regulations, 2011 and any other such guidance provided from time to time under the provisions of the Food Safety and Standard Act, 2006.

(f) Contaminants, Toxins and Residues

The products covered in this standard shall comply with Food Safety and Standards (Contaminants, Toxins and Residues) Regulations, 2011.

The products covered in this standard shall conform to the microbiological requirements as given in Appendix B of these regulations.

(g) Packaging and Labelling

The products shall comply with the packaging and labelling requirements as laid down under the Food Safety and Standards (Packaging and Labelling), Regulations, 2011, shall apply to the pre-packaged product. The product shall be stored at -18°C or lower and shall be declared on the label.”;

(C) after clause 13, the following clauses shall be inserted, namely:-

“14. Frozen cephalopods

- (a)** Frozen cephalopods means the product frozen raw cephalopods and parts of raw cephalopods, as defined below and offered for direct consumption and for further processing.
- (b)** Frozen cephalopods and parts of cephalopods are obtained from the following categories:

<i>Category</i>	<i>Family</i>
Squid	Loliginidae Onychoteuthidae Ommastrephidae Thysanoteuthidae
Cuttlefish	Sepiidae Sepiolidae

(i) The product after any suitable preparation shall be subjected to a freezing process and shall comply with the following conditions:

(1) The product after any suitable preparation shall be subjected to a freezing process and shall comply with the conditions laid down hereafter. The freezing process shall be carried out in appropriate equipment in such a way that the range of temperature of maximum crystallization is passed quickly. The freezing process shall not be regarded as complete unless and until the product temperature has reached -18°C or lower at the thermal centre after thermal stabilization. The product shall be kept deep frozen so as to maintain the quality during transportation, storage and distribution. 2.3 Frozen cephalopods and parts of cephalopods shall be processed and packaged so as to minimize dehydration and oxidation.

(2) Industrial repacking of intermediate frozen material under controlled conditions which maintain the quality of the product, followed by the reapplication of the quick freezing process as defined above is permitted.

(c) Requirements

- (a) Frozen cephalopods shall be prepared from sound squid, cuttlefish or octopus which is of a quality fit to be sold fresh for human consumption.
- (b) If glazed, the water used for glazing or preparing glazing solutions shall be of potable quality (IS 10500) or shall be clean sea-water, which meets the same microbiological standards as potable water and is free from potential contaminants.

(1) Food Additives

Only the food additives permitted under these regulations shall be used.

(2) Hygiene

The product shall be prepared and handled in accordance with the guidelines provided in part-II of Schedule 4 of the Food Safety and Standards (Licensing and Regulation of Food Businesses) Regulations, 2011 and any other such guidance provided from time to time under the provisions of the Food Safety and Standard Act, 2006.

(f) Contaminants, Toxins and Residues

The products covered in this standard shall comply with Food Safety and Standards (Contaminants, Toxins and Residues) Regulations, 2011.

The products covered in this standard shall conform to the microbiological requirements as given in Appendix B of these regulations.

(g) Packaging and Labelling

The products shall comply with the packaging and labelling requirements as laid down under the Food Safety and Standards (Packaging and Labelling), Regulations, 2011, shall apply to the pre-packaged product. The product shall be stored at -18°C or lower and shall be declared on the label.

15. Smoked fishery products

(a) Smoked fishery products means the product smoked, smoke-flavoured and smoke-dried fish prepared from fresh, chilled or frozen raw material. It deals with whole fish, fillets and sliced and similar products thereof. The standard applies to fish, either for direct consumption, for further processing, or for addition into speciality or minced products where fish constitutes only part of the edible contents.

(b) The product shall be of following types:

(i) Smoked fish is prepared from fish that has undergone a hot or cold smoking process. The smoke must be applied through one of the smoking processes defined in sub regulation 3.0 and the end product must have smoked sensory characteristics. Spices and other optional ingredients may be used.

(ii) Smoke-dried fish is prepared from fish that has undergone a combined smoking and drying process and may include a salting process as described in sub regulation 3.0. The smoke must be applied through a traditional or industrial smoke-drying process and the end product must have smoke-dried sensory characteristics. Spices and other optional ingredients may be used.

(iii) Smoke-flavoured fish is prepared from fish that has been treated with smoke flavours, without employing a smoking process as described in sub regulation 3.0. The end product must have a smoked taste. Spices and other optional ingredients may be used.

(c) Process for smoked fish, smoke – dried fish and smoke-flavoured fish is as follows:

(i) Smoking is a process of treating fish by exposing it to smoke from smouldering wood or plant materials. This process is usually characterised by an integrated combination of salting, drying, heating and smoking steps in a smoking chamber:

Provided that wood or other plant material for generation of smoke or smoke- condensates shall not contain toxic substances either naturally or through contamination, or after having been treated with chemicals, paint or impregnating materials and shall be handled in a way to avoid contamination:

Provided further that smoking of fish shall be done in a manner that minimises the formation of polycyclic aromatic hydrocarbons (PAH).

(ii) Smoking by regenerated smoke is a process of treating fish by exposing it to smoke which is regenerated by atomizing smoke condensate in a smoking chamber under the time and temperature conditions similar to those for hot or cold smoking.

(iii) Smoke Condensates are products obtained by controlled thermal degradation of wood in a limited supply of oxygen (pyrolysis), subsequent condensation of the resultant smoke vapours, and fractionation of the resulting liquid products.

(iv) Hot smoking is a process in which fish is smoked at an appropriate combination of temperature and time sufficient to cause the complete coagulation of the proteins in the fish flesh. Hot smoking is generally sufficient to kill parasites, to destroy non-sporulating bacterial pathogens and to injure spores of human health concern.

(v) Cold smoking is a process of treating fish with smoke using a time and temperature combination that will not cause significant coagulation of the proteins in the fish flesh but that will cause some reduction of the water activity.

(vi) Salting is a process of treating fish with salt of food grade quality to lower water activity in fish flesh and to enhance flavour by any appropriate salting technology (e.g., dry salting, brining, injection salting).

(vii) Drying is a process in which the moisture content in the fish is decreased to appropriate required characteristics under controlled hygienic conditions.

(viii) Packaging is a process in which smoked fish is put in a container, either aerobically or under reduced oxygen conditions, including under vacuum or in a modified atmosphere.

(ix) Storage is a process in which smoked fish is kept refrigerated or frozen to assure quality and safety of the product.

(x) Smoke drying is a process in which fish is treated by combined smoking and

drying steps to such an extent that the final product can be stored and transported without refrigeration and to achieve a water activity of 0.75 or less (10% moisture content or less), as necessary to control bacterial pathogens and fungal spoilage.

(xi) Smoke flavours are either smoke condensates or artificial flavour blends prepared by mixing chemically-defined substances in known amounts or any combination of both (smoke-preparations).

(xii) Smoke flavouring is a process in which fish or fish preparations are treated with smoke flavour. The smoke flavour can be applied by dipping, spraying, injecting, or soaking.

(d) Requirements

(i) Smoked fish, smoke-flavoured fish and smoke-dried fish shall be prepared from sound and wholesome fish, which may be fresh, chilled or frozen, and of a quality to be sold for human consumption after appropriate preparation.

(ii) Other ingredients shall be of food grade quality and conform to all applicable standards prescribed in these regulations.

(e) Food Additive

Only the food additives permitted under these regulations shall be used.

(3) Hygienic Requirements

The product shall be prepared and handled in accordance with the guidelines provided in Schedule 4 of the Food Safety and Standards (Licensing and Registration of Food Businesses) Regulations, 2011 and any other such guidance provided from time to time under the provisions of the Food Safety and Standard Act, 2006.

(4) Contaminants, Toxins and Residues

The products covered in this standard shall comply with Food Safety and Standards (Contaminants, Toxins and Residues) Regulations, 2011.

The products covered in this standard shall comply the microbiological requirements given in Appendix B of these regulations.

(5) Packaging and Labelling

(i) The label shall declare storage and handling instructions appropriate for the product.

(ii) The provisions laid down under Food Safety and Standards (Packaging and Labelling) Regulations, 2011, shall apply to the pre-packaged product.

16. Ready –to-Eat Finfish or Shell Fish Curry in Retortable Pouches

(a) Ready-to-Eat finfish or Shell fish curry in Retortable Pouches means the product thermal processed instant fish or shell fish curry in retortable pouches.

(b) Definition

(i) Product Definition

- (1) Ready-To-Eat Finfish/Shellfish Curry in Retortable Pouches is prepared from finfish or shellfish species of sound quality without any visible sign of decomposition.
- (2) The product is prepared from the edible portions of sound fish, packed in gravy of spices, vegetable fat and other ingredients appropriate to the product and heat processed by an appropriate manner after being sealed in a container so as to prevent spoilage.

(ii) Process Definition

Products are hermetically sealed and shall have received a processing treatment sufficient to ensure commercial sterility.

(iii) The product shall be presented in curry packing medium.

(c) Requirements

(i) Raw Material

The material used for preparation of this product shall be from sound finfish or shellfish species and of a quality fit to be sold fresh for human consumption.

For fish, heads and gills shall be completely removed, scales and tail may be removed. The fish may be eviscerated. If eviscerated it shall be practically free from visceral parts other roe, milt or kidney. If ungutted, it shall be practically free from undigested feed or used feed. For shrimps, heads, shell, antennae shall be completely removed.

(ii) Other Ingredients

The packing medium and all other ingredients used shall be of food grade quality and conform to all applicable standards prescribed in these regulations. No artificial colouring matter and firming agents shall be used.

(iii) Decomposition

The total volatile base nitrogen (TVBN) level of raw material (fin fish or shell fish) should not exceed 35mg/100g.

(d) Final Product

- (i) The finished product shall have the odour, flavour and colour characteristic of the product. The bones shall be soft and yielding.
- (ii) The contents of the pouch on opening shall not display any appreciable disintegration. Pieces from which portions have separated out would be treated as disintegrated units. The percentage disintegrated portions of the fish, calculated on the basis of the drained mass shall not exceed 5 % based on the average of five pouches.
- (iii) The product shall be free from foreign materials such as sand, dirt and insects, objectionable odour, or flavour.
- (iv) The residual air in the pouch after processing shall be less than 2 % of the volume of the pouch contents.
- (v) The average proportion of fish to curry in retort pouch shall be in the ratio of 60: 40.
- (vi) The percentage of salt in the product shall be 1% to 2 %, maximum.

(e) Food Additives

Only the food additives permitted under these regulations shall be used.

(f) Processing

- (i) The material shall be packed in retortable pouches, exhausted or vacuumized and heat-sealed. Exhausting can be done either by steam injection or hot filling to achieve residual air level of less than 2%.
- (ii) Processing (Retorting) shall be done in over pressure autoclave till the product reaches a F_0 value of 8-10 minutes at the slowest heating point. The water used for cooling of retort pouches shall be as per IS 10500:2012 standards and chlorinated to maintain free residual chlorine of less than 2 mg/l.

(g) Hygienic

The product shall be prepared and handled in accordance with the guidelines provided in Schedule 4 of the Food Safety and Standards (Licensing and Registration of Food Businesses) Regulations, 2011 and any other such guidance provided from time to time under the provisions of the Food Safety and Standard Act, 2006.

(h) Contaminants, Toxins and Residues

- (i) The products covered in this standard shall comply with Food Safety and Standards (Contaminants, Toxins and Residues) Regulations, 2011.

- (ii) The products covered in this standard shall comply with the microbiological requirements of thermally processed fishery products given in Table 1 of Appendix B of Food Safety and Standards (Food Products Standards and Food Additives) Regulations, 2011.

(i) Packing and Labelling

- (i) The retort pouches shall be packed in suitable retail containers to prevent physical impact during transportation.
- (ii) Retort pouch materials of food grade quality having the configuration of polyester/aluminium foil/cast polypropylene or four layers consisting of polyester/aluminium foil or aluminium oxide/nylon and cast polypropylene may be used. Other suitable packaging materials which can withstand high temperature and pressure can also be used.
- (iii) The pouches shall be of food grade. The retort pouch shall have the mechanical properties as follows:

Sr. No.	Characteristics	Requirement
1.	Tensile strength (Kgf/15 mm) machine direction	3.0-5.25
2.	Bond Strength (Kgf/15 mm)	0.225 – 0.750
3.	Heat seal strength (Kgf/15 mm), Min	4.60
4.	Bursting strength (Kg/cm ²), Min	1.74

- (iv) The provisions laid down under Food Safety and Standards (Packaging and Labelling), Regulations, 2011, shall apply to the pre-packaged product.

17. Canned fishery products

(a) Canned fishery products means canned finfish, crustaceans and molluscs solid packed or packed in oil, water or other suitable medium.

(b) Description

(i) Product Definition

Canned fishery products are obtained from the following categories of finfish, crustaceans and molluscs:

Finfish	Crustacean	Molluscs
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<p>Sardine and other clupeoids <i>Sardinella longiceps</i> <i>Sardinella gibbosa</i> <i>Sardinella fimbriata</i> <i>Sardinella albella</i> <i>Amblygaster sirm</i> <i>Dussumieria acuta</i> <i>Dussumieria elopsoides</i></p> <p>Tuna and Bonito <i>Thunnus alalunga</i> <i>Thunnus albacares</i> <i>Thunnus obesus</i> <i>Thunnus maccoyii</i> <i>Thunnus thynnus</i> <i>Thunnus tonggol</i> <i>Euthynnus affinis</i> <i>Katsuwonus pelamis</i> <i>Sarda orientalis</i> <i>Sarda sarda</i></p> <p>Mackerel <i>Rastrelliger kanagurta</i></p> <p>Seer fish <i>Scomberomorus</i> spp.</p> <p>Pomfret <i>Pampus argenteus</i> <i>Pampus chinensis</i> <i>Parastromateus niger</i></p>	<p>Shrimp/prawn* Species belonging to the family Penaeidae, Solenoceridae, Aristeidae, Sergestidae, Hippolytidae, Crangonidae, Palaemonidae and Atyidae</p> <p>Crab** <i>Scylla serrata</i> <i>Portunus pelagicus</i> <i>Potrunus sanguinolentus</i></p>	<p>Mussels <i>Perna viridis</i> <i>Perna indica</i></p> <p>Squid <i>Loligo duvauceli</i></p>
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* For canned shrimp the head, shell and antennae shall be removed

** Canned crab meat is prepared singly or in combination from the leg, claw, body and shoulder meat from which the shell has been removed.

(ii) Process Definition

Canned fishery products are packed in hermetically sealed containers and shall have received a processing treatment sufficient to ensure commercial sterility.

(iii) Presentation

(1)The product shall be presented in one of the following packing media: own juice, brine or water, edible oil, tomato sauce or curry.

(2)The can shall not show any visible external defects like denting, paneling, swelling or rusting.

- (3)The contents of the can, on opening shall not display any appreciable disintegration. Pieces from which portions have separated out would be treated as disintegrated units. The percentage of detached portion of fish calculated on the basis of the drained mass shall not exceed 5 percent by mass based on the average of 5 cans.
- (4)The product shall have the odor, flavor and color characteristic of the species.
- (5)The canned shrimp product may be presented as:
- (a) Peeled shrimp- shrimp which have been headed and peeled without removal of the dorsal tract;
 - (b) Cleaned or de-veined – peeled shrimp which have had the back cut open and the dorsal tract removed at least up to the last segment next to the tail. The portion of the cleaned or de-veined shrimp shall make up 95% of the shrimp contents;
 - (c) Broken shrimp – more than 10% of the shrimp contents consist of pieces of peeled shrimp of less than four segments with or without the vein removed;
 - (d) Canned shrimp may be designated as to size in accordance with the actual count range declared on the label.

(c) Requirements

(i)Raw Material

1. Fish

The material used for preparation of canned finfish shall be from sound fish of the species in sub-section 2.1 and of a quality fit to be sold fresh for human consumption.

Heads and gills shall be completely removed, scales and tail may be removed. The fish may be eviscerated. If eviscerated it shall be practically free from visceral parts other than roe, milt or kidney. If ungutted, it shall be practically free from undigested feed or used feed.

2. Shrimp

Shrimp shall be prepared from sound shrimp of the species in sub-section 2.1 which are of a quality fit to be sold fresh for human consumption.

3. Crab meat

Canned crab meat shall be prepared from sound crab of the species specified, which are alive immediately prior to the commencement of processing and of a quality suitable for human consumption.

4. Mussels

The mussels shall be of sound quality and free from any evidence of spoilage and degradation

5. Squid Rings

Squid rings shall be prepared from sound quality whole cleaned squids without any evidence of spoilage and deterioration.

(ii) Other Ingredients

The packing medium and all other ingredients used shall be of food grade quality and conform to all applicable standards prescribed in these regulations.

(iii) Decomposition

The raw material (fish) shall not contain more than 100 mg/Kg of histamine based on the average of the sample unit tested. This shall apply only to species of fish with potential to form hazardous level of histamine as mentioned in Food Safety and Standards (Contaminants, Toxins and Residues) Regulations, 2011.

(iv) Final Product

The product shall be free from foreign materials, filth and from grittiness. Other parameters like drained weight, disintegrated portion as % of drained weight, medium, percentage of water, vacuum, etc. are mentioned below:

Sr. No.	Characteristics	Finfish				Crustaceans		Molluscs	
		Tuna	Mackerel	Sardine	Pomfret/Seerfish	Shrimp/Prawn	Crab	Mussel	Squid
1.	Medium	Oil	Oil Brine Curry Tomato Sauce	Oil Brine Curry	Oil	Brine	Brine	Oil	Brine
2.	Drained wt. as % of water capacity*	70	65	70	66	64	65	65	64
3.	% of water in the drained liquid**	5	10	10	10			5	-

4.	Disintegrated portion as % of drained weight (max)	5	5	5	5	5	5	5	5
5.	Vacuum (Minimum)	For round cans 100 mm and negative pressure in flat cans							
6.	Head Space	5-10 mm							
7.	Can Exterior	shall not be rusted, dented or bulged							

*A tolerance of ± 5 percent is permitted

** Only applicable for oil medium

The percentage of sodium chloride in the final product of sardine and mackerel shall be 3.5 percent in the case of brine treated cans. The acidity of brine as citric acid anhydrous shall be between 0.06 and 0.20 percent (m/v).

(v) Contaminants, Toxins and Residues

The products covered in this standard shall comply with Food Safety and Standards (Contaminants, Toxins and Residues) Regulations, 2011.

The products covered in this standard shall comply with the microbiological requirements given in Appendix B of these regulations.

(vi) Food Additives

Only the food additives permitted under these regulations shall be used.

(vii) Hygienic

The product shall be prepared and handled in accordance with the guidelines provided in Schedule 4 of the Food Safety and Standards (Licensing and Registration of Food Businesses) Regulations, 2011 and any other such guidance provided from time to time under the provisions of the Food Safety and Standard Act, 2006.

(viii) Packing and Labelling

- (a) Canned products shall be packed in suitable containers, free from rust and hermetically sealed. Cans shall be lacquered, the lacquer used shall be non-toxic and shall be of such quality that it does not impart any foreign taste and smell to the contents of the cans and does not peel off during processing and storage of the product. The lacquer shall not be soluble in oil or brine.

- (b) The provisions laid down under Food Safety and Standards (Packaging and Labelling), Regulations, 2011, shall apply to the pre-packaged product.

18. Sardine Oil

- (a) Sardine oil means the product shall be prepared from fresh or well preserved or frozen sound wholesome oil sardine fish (*Sardinella longiceps*) either whole or dressed body portion (that is without head entrails and tail fin).
- (b) The Sardine oil shall be prepared by cooking pressing and separating oil from press liquor by centrifugation or by any other suitable means.

(c) Requirements

- (i) Sardine oil shall be free from foreign matters in settled or suspended condition, and separated water. The product shall be a bright and clear liquid when heated to a temperature of 40°C.
- (ii) Sardine oil shall be free from any other kind of oil including mineral oils.
- (iii) Sardine oil shall be free from foul and offensive putrefactive odour and should have only characteristic fish- oil odour.
- (iv) Sardine oil shall be of greenish straw light golden yellow or light brown colour.
- (v) Product shall also conform to the requirement given in Table:

Sr. No.	Characteristics	Requirements
1.	Free fatty acids as percent oleic acid, w/w, Max	1.0
2.	Moisture, percent by weight, Max	0.5
3.	Iodine Value	145-180
4.	Saponification value	185-205
5.	Unsaponifiable matter, percent, w/w, Max	2.0
6.	Refractive Index (40°C)	1.4739-1.4771

(d) Hygienic

The product shall be prepared and handled in accordance with the guidelines provided in Schedule 4 of the Food Safety and Standards (Licensing and Registration of Food Businesses) Regulations, 2011 and any other such guidance provided from time to time under the provisions of the Food Safety and Standard Act, 2006.

(e) Contaminants, Toxins and Residues

The products covered in this Standard shall comply with Food Safety and Standards (Contaminants, Toxins and Residues) Regulations, 2011.

The products covered in this standard shall comply with the microbiological requirements as given in Appendix B of these regulations.

(f) Packaging and Labelling

The provisions laid down under Food Safety and Standards (Packaging and Labelling), Regulations, 2011, shall apply to the pre-packaged product.

19. Edible fish powder

- (a) Edible fish powder means the product prepared from non-oily white fish like sprats, either from a single species or their mixture. Fresh fish of edible quality which is normally consumed whole should be used for the preparation.
- (b) The fish need not be dressed but should be washed and cooked well for the preparation of the powder.
 - (i) Poisonous fish like marine snakes, elasmobranch fish with a high quantity of urea, oily fish and fish with black viscera are not considered suitable for preparation of edible fish powder.

(c) Requirement

- (i) Edible fish powder shall be a fine powder free from needle-like bones. It shall blend easily with cereal flours. It shall have a faint yellow color and the characteristic flavor and taste of dry fish. It shall be free from rancidity and off-flavors.
- (ii) No organic solvent or chemicals shall be used in its preparation.
- (iii) Particle Size – Unless otherwise specified, the edible fish powder shall be of such fineness that it passes completely through a 100-mesh sieve.
- (iv) The edible fish powder shall comply with the requirements given in Table below.
- (v) The Protein Efficiency Ratio (PER) shall not be less than 2.5 (IS : 7481).

**Table
Requirement for Edible Fish Powder**

Sr. No. (1)	Characteristic (2)	Requirement (3)
1.	Moisture % by weight, Max	10
2.	Crude protein content (N X 6.25) on dry basis percent by weight, Min	65
3.	Total available lysine g/100g of Protein, Min	6

Sr. No. (1)	Characteristic (2)	Requirement (3)
4.	Fat content on dry basis % by Weight, Max	6
5.	Ash on dry basis % by weight, Max	18
6.	Acid insoluble as on dry basis % by weight, Max	0.5

(d) Food Additives

Only the food additives permitted under these regulations shall be used.

(e) Hygiene

The product shall be prepared and handled in accordance with the guidelines provided in part-II of Schedule 4, of the Food Safety and Standards (Licensing and Regulation of Food Businesses) Regulations, 2011 and any other such guidance provided from time to time under the provisions of the Food Safety and Standard Act, 2006.

(f) Contaminants, Toxins and Residues

- (i) The Edible Fish Powder covered in this standard shall comply with the Food Safety and Standards (Contaminants, Toxins and Residues) Regulations, 2011.
- (ii) The product shall comply the microbiological requirements as given in Appendix B of these regulations.

(g) Packaging and Labelling

- (i) The Edible Fish Powder shall be packed in clean sound containers made of tinplate, Post Consumer Recycled Content (PCR C) sheets, cardboard paper or other food grade material to protect it from spillage, contamination, migration of moisture, or air from the atmosphere and seepage of fat into the material through the packing material. When packed in flexible material the packaging material should be capable of withstanding handling during transportation. The edible fish powder shall not come in direct contact with packaging material other than grease proof or sulphate paper cellulose paper or any other nontoxic packing material which may be covered with moisture proof laminate or coated paper. When packed in metallic container the container shall be airtight and completely filled to have minimum air, or the space shall be filled with inert gas or the content held in vacuum.
- (ii) The provisions laid down under the Food Safety and Standards (Packaging and Labelling), Regulations, 2011, shall apply to the pre-packaged product.

20. Fish Pickles

(a) Fish pickle means the product shall possess a good uniform colour and appearance and shall be practically free from defects, visible fungal growth and disintegration of meat.

(b) The material shall possess a good texture, shall not be unduly hard, or tough, and shall be free from development of any softening.

(c) Requirements

- (1) Raw material;
- (2) Edible fish;
- (3) Spices and condiments such as ginger garlic, chillies, curry powder;
- (4) Edible common salt;
- (5) Preservation media;
- (6) Vinegar (4 % acetic acid); and
- (7) Edible vegetable oils.

(i) The product shall possess the characteristic pleasant aroma and flavor and shall be devoid of any objectionable off -taste smell or odour.

(ii) The material shall be free from artificial colouring matter and firming agents other than edible common salt and vinegar.

(iii) The material shall conform to the requirement prescribed in Table below.

**Table
Requirement for Fish Pickles**

Sr. No.	Characteristics	Requirement
1.	Fluid portion % by weight, Max	40
2.	pH	4.0-4.5
3.	Acidity as acetic acid of fluid Portion % by weight, Max	2.5-3.0
4.	Sodium chloride % by weight, Max	12.0

(d) Food Additives

Only the food additives permitted under these regulations shall be used.

(e) Hygiene

The product shall be prepared and handled in accordance with the guidelines provided in part-II of Schedule 4 of the Food Safety and Standards (Licensing and Regulation of Food Businesses) Regulations, 2011 and any other such guidance provided from time to time under the provisions of the Food Safety and Standard Act, 2006.

(f) Contaminants, Toxins and Residues

- (i) The Edible Fish Powder covered in this standard shall comply with Food Safety and Standards (Contaminants, Toxins and Residues) Regulations, 2011.
- (ii) The product shall comply the microbiological requirements as given in Appendix B of these regulations.

(g) Packaging and Labelling

- (i) Fish pickles shall ordinarily be packed in glass containers or in food grade polyethylene pouches as may be found suitable so as to protect it from deterioration.
- (ii) The provisions laid down under the Food Safety and Standards (Packaging and Labelling), Regulations, 2011, shall apply to the pre-packaged product.

21. Frozen minced fish meat

(a) Frozen minced fish meat means the product frozen minced fish meat as defined below and offered for direct consumption and for further processing.

(b) Raw Material

- (i) Clean, and fresh fish which do not show any signs of degradation and spoilage shall be used.
- (ii) The fish shall be gutted; the tail, entrails, bones, tips, skin, head and other non- edible portion shall be removed and eviscerated. Fish shall be washed thoroughly with clean potable water to remove the blood, etc. Variety of fish used shall be specified.
- (iii) The fish shall be properly iced and maintained at a temperature not exceeding 5°C till transported to the freezing factory.

(c) Requirements

(i) Processing

- (1) Fresh fish, shall be washed to make free of all foreign matter preferably by eighth chilled potable water (5°C) having 5 mg/kg (ppm) of available chlorine and meat separated from fish in wholesome condition.
- (2) The material shall be quick frozen at a temperature not exceeding -30°C in polyethylene wrappers and packed in waxed cartons in the minimum possible time.
- (3) The quick frozen material shall be stored in the cold storage at a temperature not less than -23 °C.

(ii) Finished Products

- (1) The frozen minced fish meat, on thawing be clean and shall be found undamaged and free from defects. Deterioration, such as dehydration, oxidative rancidity and adverse changes in the texture shall not be present. The product shall be free from foreign matter and finishing agents.
- (2) The products shall conform to the requirements prescribed in Table below:

Table
Requirement for Frozen minced fish meat

Sr. No. (1)	Characteristic (2)	Requirement (3)
1.	Colour of minced fish meat	Characteristic of the species
2.	Texture of the minced meat	Characteristic of the species
3.	Odour	Characteristic of the species, free from rancid, putrid or foreign odour
4.	Flavour	Characteristic of the species, sweetish and pleasant, free from spoilt or foreign flavour.
5.	Bone content, % by weight, Max	1.0

(iii) Food Additives

Only the food additives permitted these regulations shall be used.

(iv) Hygiene

The product shall be prepared and handled in accordance with the guidelines provided in part-II of Schedule 4 of the Food Safety and Standards (Licensing and Regulation of Food Businesses) Regulations, 2011 and any other such guidance provided from time to time under the provisions of the Food Safety and Standard Act, 2006.

(v) Contaminants, Toxins and Residues

The Edible fish powder covered in this standard shall comply with the Food Safety and Standards (Contaminants, Toxins and Residues) Regulations, 2011.

The product shall comply the microbiological requirements with appendix B of Food Safety and Standards (Food Products Standards and Food Additives) Regulations, 2011.

(vi) Packaging and Labelling

The provisions laid down under Food Safety and Standards (Packaging and Labelling), Regulations, 2011, shall apply to the pre-packaged product.

22. Freeze dried prawns (Shrimps)

(a) Freeze dried prawns (Shrimps) means the product freeze dried prawns as defined below and offered for consumption.

(b) The freeze dried prawns shall be of any edible species.

(c) Freeze dried prawns shall be of the following types:

(i) Peeled, Non-deveined and Cooked – Head and shell removed completely and cooked.

- (ii) Peeled, Deveined and Cooked – Head, shell and dorsal tract removed and cooked.
- (iii) Cooked and Peeled – Peeled after cooking.

(d) Requirements

- (i) The raw material shall be prepared from clean, wholesome and fresh prawns, and shall not show any visible sign of spoilage.
- (ii) The colour of the raw material shall typically be of freshly caught prawns. The meat shall be firm and shall have the typical odour of freshly caught prawns. The material shall be free from any discoloration and off odours.
- (iii) The water used in the processing of prawns shall be of potable quality and shall contain 5 mg/kg available chlorine.
- (iv) The maximum value for moisture content shall be 2.0 percent.
- (v) The extent of rehydration shall be minimum 300 percent (IS: IS 14949).
- (vi) When observed visually, physical defects for various characteristics shall not exceed the values given in Table below.

**Table
Physical Defects for Various Characteristics**

Sr. No. (1)	Characteristic (2)	Requirement Percent by Count (3)
1.	Deterioration with spoiled pieces	Nil
2.	Discoloration	3
3.	Black spots	Nil
4.	Broken and damaged pieces	2
5.	Leges, bits of veins etc.	Nil
6.	Foreign matter or filth	Nil

(e) Food Additives

Only the food additives permitted under these regulations shall be used.

(f) Hygiene

The product shall be prepared and handled in accordance with the guidelines provided in part-II of the Schedule 4 of the Food Safety and Standards (Licensing and Regulation of Food Businesses) Regulations, 2011 and any other such guidance provided from time to time under the provisions of the Food Safety and

Standard Act, 2006.

(g) Contaminants, Toxins and Residues

The Edible fish powder covered in this standard shall comply with Food Safety and Standards (Contaminants, Toxins and Residues) Regulations, 2011.

The product shall comply the microbiological requirements as given in Appendix B of these regulations.

(h)Packaging and Labelling

The provisions laid down under Food Safety and Standards (Packaging and Labelling), Regulations, 2011, shall apply to the pre-packaged product.

23. Frozen clam meat

(a) Frozen clam meat means the product frozen clam meat as defined below and offered for consumption.

(b) Frozen Clam Meat is the picked either raw or after heating from *Vallarta* species or *Meretrix* species or any other edible species of clams and frozen either raw or after cooking.

(c) Frozen clam meat shall be of following two types:

- (i) Raw Frozen Clam Meat (RFCM), and
- (ii) Cooked Frozen Clam Meat (CFCM)

Note.— The clams treated with hot water for opening the shell with the meat picked up from it and subsequently frozen shall not be treated as cooked variety.

(d) The frozen clam meat shall have the characteristic appearance and colour. It shall be free from discolouration, deterioration, sand particles, pieces of shell, filth or any other foreign matter.

(e) Requirements

The frozen clam meat shall have a soft and firm texture. The material shall be of reasonably uniform size with broken pieces of meat not exceeding 10 % by count.

(f) Food Additives

Only the food additives permitted under these regulations shall be used.

(g) Hygiene

The product shall be prepared and handled in accordance with the guidelines provided in part-II of Schedule 4 of the Food Safety and Standards (Licensing and Regulation of Food Businesses) Regulations, 2011 and any other such guidance provided from time to time under the provisions of the Food Safety and Standard Act, 2006.

(h) Contaminants, Toxins and Residues

- (i) The edible fish powder covered in this standard shall comply with Food Safety and Standards (Contaminants, Toxins and Residues) Regulations, 2011.
- (ii) The product shall comply the microbiological requirements as given in Appendix B of these regulations.

(i) Packaging and Labelling

The provisions laid down under the Food Safety and Standards (Packaging and Labelling), Regulations, 2011, shall apply to the pre-packaged product.’’