



I. Microbiological Requirements of Fishery Products Based on Countries

INDIA

Product	TVC CFU/g	<i>E. coli</i> CFU/g	<i>Salmonella</i> spp. in 25 g	<i>V. cholerae</i> in 25 g
Chilled/Frozen Finfish (Raw)	n = 5 c= 3 m = 5 x 10 ⁵ M = 1 x 10 ⁷	n = 5 c= 3 m = 11 M = 500	n = 5 c= 0 m = 0	n = 5 c= 0 m = 0
Chilled/Frozen Crustaceans (Raw)	n = 5 c= 3 m = 1 x 10 ⁶ M = 1 x 10 ⁷	n = 5 c= 3 m = 11 M = 500	n = 5 c= 0 m = 0	n = 5 c= 0 m = 0
Chilled/Frozen Cephalopods (Raw)	n = 5 c= 2 m = 1 x 10 ⁵ M = 1 x 10 ⁶	n = 5 c= 0 m = 20	n = 5 c= 0 m = 0	n = 5 c= 0 m = 0
Live Bivalve Molluscs (Raw consumption)	-	n = 5 c= 1 m = 230 M = 700	-	-
Chilled/Frozen Bivalves (Raw)	n = 5 c= 2 m = 1 x 10 ⁵ M = 1 x 10 ⁶	n = 5 c= 0 m = 46	n = 5 c= 0 m = 0	n = 5 c= 0 m = 0



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Product	TVC CFU/g	<i>S. aureus</i> CFU/g	Yeast and Mold CFU/g	<i>E. coli</i> CFU/g	<i>Salmonella</i> spp. in 25 g	<i>Vibrio</i> <i>cholerae</i> in 25 g	<i>L. monocytogenes</i> in 25 g	<i>Clostridium</i> <i>botulinum</i>
Frozen Cooked Crustaceans/Frozen Heat Shucked Mollusc (Ready to eat)	n = 5 c= 2 m = 1 x 10 ⁵ M = 1 x 10 ⁶	n = 5 c= 2 m = 1 x 10 ² M = 1 x 10 ³	-	n = 5 c= 2 m = 1 M = 10	n = 5 c= 0 m = 0	n = 5 c= 0 m = 0	n = 5 c= 0 m = 0	-
Dried/Salted and Dried Fishery Products (Raw)	n = 5 c= 0 m = 1 x 10 ⁵	-	n = 5 c= 2 m = 100 M = 500	n = 5 c= 0 m = 20	n = 5 c= 0 m = 0	-	-	-
Fermented Fishery Products (Raw)	-	n = 5 c= 1 m = 1 x 10 ² M = 1 x 10 ³	n = 5 c= 0 m = 100	n = 5 c= 2 m = 4 M = 40	n = 10 c= 0 m = 0	-	-	Absence
Smoked Fishery Products (Ready to eat)	n = 5 c= 0 m = 1 x 10 ⁵	n = 5 c= 2 m = 1 x 10 ² M = 1 x 10 ³	-	n = 5 c= 3 m = 11 M = 500	n = 5 c= 0 m = 0	n = 5 c= 0 m = 0	n = 5 c= 0 m = 0	-



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Accelerated Freeze Dried Fishery Products (Ready to eat)	n = 5 c= 0 m = 1 x 10 ⁴	n = 5 c= 0 m = 100	-	n = 5 c= 0 m = 20	n = 5 c= 0 m = 0	n = 5 c= 0 m = 0	n = 5 c= 0 m = 0
Fish Mince/Surimi and Analogues เช่น ปูอัด (Ready to eat)	n = 5 c= 2 m = 1 x 10 ⁵ M = 1 x 10 ⁶	n = 5 c= 2 m = 1 x 10 ² M = 1 x 10 ³	-	n = 5 c= 0 m = 20	n = 5 c= 0 m = 0	n = 5 c= 0 m = 0	n = 5 c= 0 m = 0
Fish, shrimp or mollusc Pickle (Ready to eat)	n = 5 c= 0 m = 1 x 10 ³	n = 5 c= 1 m = 1 x 10 ² M = 1 x 10 ³	n = 5 c= 0 m = 100	n = 5 c= 0 m = 20	n = 5 c= 0 m = 0	n = 5 c= 0 m = 0	-
Battered and Breaded Fishery Products (Ready to eat)	n = 5 c= 2 m = 1 x 10 ⁵ M = 1 x 10 ⁷	n = 5 c= 1 m = 1 x 10 ² M = 1 x 10 ³	n = 5 c= 0 m = 100	n = 5 c= 2 m = 11 M = 500	n = 5 c= 0 m = 0	n = 5 c= 0 m = 0	n = 5 c= 0 m = 0



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Convenience Fishery Products ประเภท extruded fishery products, fried items namely fish wafers, crackers, fish cutlets, fish burgers เป็นต้น (Ready to eat)	n = 5 c= 2 m = 1 x 10 ³ M = 1 x 10 ⁴	n = 5 c= 2 m = 1 x 10 ² M = 1 x 10 ³	n = 5 c= 2 m = 1 M = 10	n = 5 c= 0 m = 0	n = 5 c= 0 m = 0	n = 5 c= 0 m = 0
Convenience Fishery Products ประเภท surimi -based products cooked (in-pack), pasteurized crab meat, pasteurized molluscs which are distributed as refrigerated (Ready to eat)	n = 5 c= 2 m = 1 x 10 ³ M = 1 x 10 ⁴	n = 5 c= 2 m = 1 x 10 ² M = 1 x 10 ³	n = 5 c= 2 m = 1 M = 10	n = 5 c= 0 m = 0	n = 5 c= 0 m = 0	n = 5 c= 0 m = 0



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Product	TVC CFU/g	<i>S. aureus</i> CFU/g	Yeast and Mold CFU/g	<i>Salmonella</i> spp. in 25 g	Incubation test
Powdered form finfish/shellfish Based Products (Ready to eat)	n = 5 c= 2 m = 1 x 10 ⁴ M = 1 x 10 ⁵	n = 5 c= 2 m = 10 M = 1 x 10 ²	n = 5 c= 0 m = 100	n = 5 c= 0 m = 0	-
Thermally Processed Fishery Products	-	-	-	-	ACCEPTABLE

คำจำกัดความ :

Chilled/Frozen Finfish includes clean and wholesome finfish, which are either in raw, chilled or frozen condition and handled in accordance with good manufacturing practices.

Chilled/Frozen Crustaceans includes clean, whole or peeled crustaceans (shrimp/prawn, crabs and lobster) which are either in raw, chilled or frozen condition and handled in accordance with good manufacturing practices.

Chilled/Frozen Cephalopods includes cleaned, whole or de-skinned cephalopods (squid, cuttlefish and octopus) which are either in raw, chilled or frozen condition and handled in accordance with good manufacturing practices.



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Live Bivalve Molluscs includes Oyster, Clam, Mussel, Scallop, Abalone which are alive immediately prior to consumption. Presentation includes the shell. Live bivalve molluscs are harvested alive from a harvesting area either approved for direct human consumption or classified to permit harvesting for an approved method of purification, like relaying or depuration, prior to human consumption. Both relaying and depuration must be subject to appropriate controls implemented by the official agency having jurisdiction.

Chilled/Frozen Bivalves includes clean, whole or shucked bivalves, which are live either in chilled or frozen condition and handled in accordance with good manufacturing practices. This product category includes filter feeding aquatic animals such as oysters, mussels, clams, cockles and scallops.

Frozen cooked Crustaceans or Frozen heat shucked Mollusca means clean, whole or peeled crustaceans, which are cooked at a defined temperature and time and subsequently frozen. Cooking of crustaceans must be designed to eliminate six log reduction of most heat resistant vegetative bacteria i.e. *Listeria monocytogenes*. Frozen heat shucked mollusca includes bivalves where meat is removed from the shell by subjecting the animals to mild heat before shucking to relax the adductor muscle and subsequently frozen.

Dried or Salted and Dried fishery Products means the product prepared from fresh or wholesome finfish or shellfish after drying with or without addition of salt. The fish shall be bled, gutted, beheaded, split or filleted and washed prior to salting and drying. Salt used to produce salted fish shall be clean, free from foreign matter, and has no visible signs of contamination with dirt, oil, bilge or other extraneous materials.

Thermally Processed Fishery Products means the product obtained by application of heat or temperature for sufficient time to achieve commercial sterility in hermetically sealed containers.

Fermented Fishery Products includes any fish product that has undergone degradative changes through enzymatic or microbiological activity either in presence or absence of salt. Non-traditional products manufactured by accelerated fermentation, acid ensilage and chemical hydrolysis also belong to this category.



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Smoked Fishery Products means fish or fishery product subjected to a process of treatment with smoke generated from smouldering wood or plant materials. Here the product category refers to hot smoked fish where fish is smoked at an appropriate combination of temperature and time sufficient to cause the complete coagulation of the proteins in the fish flesh.

Accelerated Freeze dried Fishery Products means fish, shrimp or any fishery product subjected to rapid freezing, followed by drying under high vacuum so as to remove the water by sublimation to a final moisture content of less than two percent.

Fish Mince/Surimi and analogues means comminuted, mechanically removed meat which have been separated from and are essentially free from bones, viscera and skin. Surimi is the stabilized myofibrillar proteins obtained from mechanically deboned fish flesh that is washed with water and blended with cryoprotectants. Surimi analogues are variety of imitation products produced from surimi with addition of ingredients and flavor.

Fish Pickle means an oily, semi-solid product with spices and acidic taste obtained from maturation of partially fried fish with vinegar. It is produced by frying edible portions of fish, shrimp or mollusc, followed by partial cooking with spices, salt and oil and maturing for 1-3 days with added organic acids. The product is intended for direct human consumption as a seasoning, or condiment for food.

Battered and Breaded Fishery Products include fish portions, fillets or mince coated with batter and/or breading. Batter means liquid preparation from ground cereals, spices, salt, sugar and other ingredients and/or additives for coating. Typical batter types are non-leavened batter and leavened batter. Breading means dry breadcrumbs or other dry preparations mainly from cereals with colourants and other ingredients used for the final coating of fishery products.



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Convenience Fishery Products are tertiary food products made of fish, which are in ready to eat form and also includes snack based items prepared from fish and fishery products meant for direct human consumption such as extruded fishery products, fried items namely fish wafers, crackers, fish cutlets, fish burgers and other such products. These products can be consumed directly after minimal handling and processing. This category Version-XI (11.08.2020) includes Sous- vide cooked products, surimi- based products cooked (in- pack), pasteurized crab meat, pasteurized molluscs which are distributed as refrigerated, but meant for direct human consumption with minimal or no cooking.

Powdered Fish based Products include the products which are prepared from finfish/shellfish or parts thereof, with or without other edible ingredients in powdered form, suitable for human consumption. These may be consumed directly or as supplements and also after hydration and this category includes powdered and dried fish products generally used as ingredients in food preparations such as fish soup powder, fish chutney powder, ready to use fish-mix, and such other food.

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FOOD SAFETY AND STANDARDS (FOOD PRODUCTS STANDARDS AND FOOD ADDITIVES) REGULATIONS, 2011.

https://www.fssai.gov.in/upload/uploadfiles/files/Compendium_Food_Additives_Regulations_08_09_2020-compressed.pdf