

## **Organoleptic Inspection- ensuring safe, high-quality seafood for consumers**

The following article is a part of FIFP webinars conducted on 20th September, 2025 on the topic “Organoleptic Inspection- ensuring safe, high-quality seafood for consumers”.

Note from the Chief Editor:

Organoleptic Inspection- ensuring safe, high-quality seafood for consumers was the topic of FIFP webinar conducted on 20<sup>th</sup> September 2025. Organoleptic inspection is a fundamental quality control tool in the seafood industry for ensuring availability of premium quality products to consumers. Ms Subimol made a relevant presentation on the importance of assessing the sensory attributes of seafood such as its appearance, odour, texture, and taste to determine freshness and detect signs of spoilage or contamination. Her presentation covered various sensory parameters in organoleptic inspection of seafood; sampling procedures for different stages of fish processing like raw material reception, online production and finished product inspection; importance of temperature control, proper handling, and systematic sampling. Ms Subimol highlighted the importance of assessment of organoleptic inspection of seafood.

### **Introduction**

Organoleptic inspection is a fundamental quality control tool in the seafood industry, ensuring that products reaching consumers are safe, fresh, and of premium quality. It involves assessing the sensory attributes of seafood such as its appearance, odour, texture, and taste to determine freshness and detect signs of spoilage or contamination. These evaluations, performed at various stages from raw material receipt to finished product inspection, form a critical part of Good Manufacturing Practices (GMP) and food safety systems.

Proper temperature control is the cornerstone of maintaining seafood quality. Raw materials must be kept between 0°C to 4°C, with uniform icing at a ratio of one part ice to one-part raw material during transport and reception. Inadequate chilling or poor icing can lead to rapid bacterial growth, histamine formation especially in scombroid fishes and deterioration of texture.

### **Sensory parameters in organoleptic inspection**

#### ***Appearance and colour of seafood***

The appearance and colour of seafood provide clear indicators of freshness and handling conditions. Fresh cephalopods such as squid, cuttlefish, and

octopus should possess a natural sheen and bright pigmentation without being yellow or dull. Fish should exhibit bright, metallic skin with clear eyes, red gills, and transparent mucus, whereas discolouration or milky mucus indicates spoilage. Crustaceans must appear clean, intact, and free from foreign matter, mud, or unpleasant odour.

### ***Odour and texture***

Odour and texture are key sensory parameters in organoleptic inspection. Fresh seafood emits a mild, pleasant sea smell, while any off-odour, sour, rancid, or ammonia-like is grounds for immediate rejection, with zero tolerance permitted. Texture should be firm and elastic; soft or mushy flesh indicates decomposition or poor chilling. In cephalopods, the surface slime must be clear and not excessive. Flesh detachment from bones in fish or loose shells in crustaceans are signs of deterioration and require rejection of the lot.

### ***Presence of any foreign or objectionable matter***

The presence of any foreign or objectionable matter is an indicator of poor hygiene and inadequate handling. Foreign Vegetable Matter (FVM) or Objectionable Foreign Matter (OFM), such as metal, plastic, sand, mud, or filth, are critical defects with zero tolerance. Similarly, the detection of parasites, filth, or grit indicates insufficient washing or contamination and is strictly not permitted in export-quality seafood.

### ***Miscellaneous defects***

Other common defects include decomposition, deterioration, mechanical damage, loose shells, black spots, and dehydration. In histamine-forming fish species, the presence of more than 2.5 percent decomposed pieces results in lot rejection. Even early deterioration, reflected by soft flesh or mild odour, is unacceptable. Broken or damaged pieces may be tolerated up to five to ten percent depending on buyer specifications. Loose shells in crustaceans signify decomposition and are not allowed in export-grade material. Black spot or melanosis, though not a health hazard, is a major quality defect caused by enzyme activity and can be controlled through prompt icing and use of approved anti-melanosis agents. Dehydration, typically seen in frozen products due to poor glazing, appears as whitish or dry surface areas and reduces product value.

### ***Sampling procedures***

Sampling procedures vary according to the processing stage like raw material reception, online production, or finished product inspection. Finished product sampling follows the Export Inspection Council (EIC) Executive Instructions, where the number of samples to be examined

depends on the total lot size. Detailed organoleptic acceptance criteria for shrimps and other seafood products are outlined in the EIC Executive Instructions (<https://eicindia.gov.in/WebApp1/resources/PDF/Exec>).

Additional reference materials include the Codex Standard for Fish and Fishery Products (<https://www.fao.org/fao-who-codexalimentarius/codex-texts/list-standards/en/>)

The U.S. FDA's Fish and Fishery Products Hazards and Controls Guidance (<https://www.fda.gov/media/80637/download>) and the European Union Regulations (EC) No 853/2004 and (EU) 2019/627

## **Conclusion**

Organoleptic inspection remains an essential, low-cost, and reliable method for monitoring seafood freshness and hygiene. When implemented alongside strict temperature control, proper handling, and systematic sampling, it ensures integrity of seafood products, compliance with international regulations, and sustained consumer confidence in the safety and quality of seafood.

## **Author: Ms. Subimol, N.S**

Quality Assurance Manager, Adivishnu Marine Foods Pvt Limited, Andhra Pradesh

Ms. Subimol is currently working as Quality Assurance Manager at Adivishnu Marine Foods Private Limited, Andhra Pradesh. She holds a master's degree in Seafood Safety and Trade from CUSAT. She began her career in 2011 as a QC Trainee at ABAD EXIM, Kakinada SEZ, and subsequently worked with various companies in Kochi, Mumbai, and Andhra Pradesh. She has hands-on experience with block frozen, IQF, and cooking line operations. She is a certified food safety professional with more than 13 years of experience in seafood processing and quality control, along with valuable expertise in spice processing. She has completed specialized training in HACCP, ISO 22000 Lead Auditor, FSSC 22000, and BRCGS. Her experience extends to the successful implementation and maintenance of internationally recognized standards including HALAL, ASC, and BAP. She also brings extensive knowledge of international registrations and regulatory approvals, including FSSAI, USFDA, EU, SFDA, China, Vietnam, and the UK.