

[1] Of all flesh foods, fish is the most susceptible to tissue decomposition, rancidity, and microbial spoilage.

[2] One primary processing company in NZ packs their seafood into ice filled bins as soon as it is caught. It is then be transported to a factory and packed according to guidelines depending on the type of seafood. Some are layer packed in to poly bins with ice packs, some are individually bagged or packed. Some product will be blast frozen to - 20 C. Gutting and skinning fish removes an enzyme that starts to decompose the fish and also microorganisms that cause spoilage. It is further distributed by refrigerated truck.

Apparently fish stored above 4C will loose 1 days shelf life per hour. Carefully handled fish should stay fresh for 4-6 days. Ideally it should be stored between 1 and 4C. In the home fridge, ideally fish should be sitting on an ice pack and covered with plastic on the bottom shelf.

Frozen fish should be wrapped in plastic and put in an air tight container so ice crystals do not spoil the fish. It should be eaten within 3 months. Commercially frozen fish is blast frozen below—20C so can be kept frozen for longer.



[3] Secondary processing of food includes salting it. The salt takes the water out of the flesh, which is what bacteria and microbes (which feed on the flesh) need to survive. The salting process also increases the salt content of the flesh, which dehydrates and kills the bacteria. Salting fish will preserve it almost indefinitely. Iodised salt should be avoided as this will make the fish go dark and influence the flavour.

[4] Fish can also be brined. This is preserving it in a salty liquid or in the liquid that the salt will extract out from the fish. This will preserve the fish for several weeks.



[5] Smoking. This is drying it out (like salting) to make an environment where bacteria can't multiply. Smoking uses heat to drive off the moisture.

[6] Legal and marketing requirements for labelling

Fish and fish products must be labelled (on the outer packaging) with the scientific fish name when transporting the product.

Fish products must be labelled in accordance with the Australia New Zealand Food Standards Code.

Additional labelling requirements include:

- Allergens—a warning statement is required eg presence of peanuts, cereals, unpasteurised egg products, added sulphites
- A nutrition claim (as part of the nutrition information panel) eg gluten free, low fat
- Irradiated food (ie treated with ionising radiation) eg irradiated herbs have been added
- Percentage of fish in the product eg in fish cakes
- Raw fish has been formed to look like a cut of fish, cooking instructions to indicate how the microbiological safety of the product can be achieved eg for fish fingers



Some seafood is labelled with the Marine Stewardship Council (MSC) eco label. This identifies seafood as coming from an independently certified sustainable fishery that is well managed, has healthy numbers and that carefully manages impacts on the marine environment.

[7] There is a rigorous testing process to make sure there are no toxins present before mussels are sent to market. These operating regimes are laid down by both New Zealand government regulations and international food processing standards. Regular audits are carried out by Ministry inspectors as well as buyer appointed auditors. Each factory runs its own quality control program including a Hazard Analysis Critical Control Point (HACCP) plan.

[8] Some mussels are processed in their half shell. They will be sold as chilled or frozen. The whole mussels are cleaned, and any broken ones discarded. They are heated treated (generally lightly steamed) to open the shell. They are de-bearded as the threads they use to cling on with are not edible.

They are then sent through a freezing plant where they are snap frozen quickly (called quick frozen, QF) to preserve the goodness and quality.

Frozen mussels should be thawed in the fridge for 5-8 hours before cooking. Excess liquid should be drained off. They should be used immediately.

[9] Mussels are also removed from their shells and marinated. While still in their shells, they are immersed in boiling water for 4-6 minutes to destroy the natural enzymes that would otherwise cause the meat to break up during marinating. They will soaked in water or brine after that to get rid of any remaining sand or grit. They are packaged in plastic pots with an acetic acid or vinegar mixture poured over them. The acid content and packing process needs to be carefully controlled to eliminate bacterial spoilage of the mussels and the liquid and also mould growth on the surface of the mussels.

