

The Right Package for Frozen Fish

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As in other meat animals, a variety of spoilage mechanisms are activated in fish soon after they die. These cause the eating quality of the fish to deteriorate by different pathways depending on whether they are frozen or not frozen. This article is concerned only with frozen fish and will not consider any aspect of handling of fresh fish.

When fish of high quality are held in a freezer, their quality is reduced and this quality loss becomes evident by a toughening of the texture, by oxidation of the fat (even in lean fish), and by loss of water. Loss of water is undesirable not only because it has a bad effect on the quality, but also because it reduces the weight of the product, sometimes substantially. Fish will last for months when they are stored in a freezer and it has been amply demonstrated that the colder the storage temperature, the longer they will last. Considering the value of fish, control of the storage temperature remains an economic advantage—a fact which is now receiving wider recognition than it has in the past. An equally important

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but less appreciated fact is that proper packaging of fish also provides a substantial economic advantage to fish processors.

Packages are selected for a variety of reasons—they are protective, attractive, etc. However, we now know that the packages selected for frozen fish must prevent the entry of air and the escape of water. Fish packaged in gas-impermeable containers last longer than those packaged in films that allow gases to pass through. Therefore, it can be seen that with the proper package, fish quality can be maintained longer, and rancidity and dehydration can be prevented. Too often there is the misconception that packaging is packaging and that any plastic package will do.

While any package is satisfactory for some products, it is certainly not the case for fish products. For example, "poly" bags (made from polyethylene) are very popular and are satisfactorily used for many products, but they are definitely not at all satisfactory for packaging fish. Polyethylene allows air to come into the packaged fish so easily that it might just as well not be used. The oxidative reactions continue unabated. Thus, the fish spoils just as easily as if it were not packaged.

"Poly" bags do prevent dehydration, however, so from that standpoint they are actually better than nothing at all. It cannot

be emphasized too strongly, therefore, that fish will last longer when they are properly packaged. Gas-impermeable packages can be made from a number of materials which include coated cellophanes, polyester, polyvinylidene chloride, nylon-11, aluminum laminates, certain rubber hydrochlorides, and polyvinyl alcohol. Some of these are coated to improve certain functional properties such as sealability. These are more expensive than plain "poly" bags, but considering the value of fish and the vulnerability of its quality, they are definitely worth the extra cost from the points of view of both the industry, which gains an economic advantage, and the consumer, who gains through improved quality. One need only to study the results of surveys by Consumers Union¹ and other consumer groups on the quality of frozen fish to understand the economic advantages bound to accrue when the quality of fish is not permitted to become unacceptable—a situation that results in considerable product loss and in dissatisfied consumers.

In summary, frozen fish should be packaged only in gas-impermeable containers and they should be stored at low temperatures (never above 0°F).

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