CLEMSON COOPERATIVE EXTENSION

http://www.clemson.edu/extension/hgic

HGIC 3508 1-888-656-9988

HOME & GARDEN INFORMATION CENTER

Safe Handling of Fish

Selecting the Best

Spotting a Safe Seafood Seller: Always purchase fish from a dealer that maintains high quality. Based on FDA's Food Code, here are some ways of spotting a safe fish dealer:

- Employees should be in clean clothing and wearing hair coverings.
- They should not be smoking, eating or playing with their hair.
- They should not be sick or have any open wounds.
- Employees should be wearing disposable gloves when handling food and change gloves after doing nonfood tasks and after handling raw fish.
- Fish should be displayed on a thick bed of fresh — not melting — ice preferably in a case or under some type of cover. Fish should be arranged with the bellies down so that the melting ice drains away from the fish, thus reducing the chances of spoilage.

Selecting Quality Fish: Appearance is bright and shiny in quality fish, and most of the scales are intact and adhere tightly to the skin. Each species has characteristic markings and colors which fade and become less pronounced as the fish loses freshness. Eyes are bright, clear, full and often protrude. As quality goes down, the eyes often turn pink and become cloudy and sunken. This does not always apply to small-eyed fish such as salmon. Gills are red and free from slime. With time, the color fades to light pink, then gray and finally greenish or dull brown. Odor is fresh and mild. A fish just out of the water has practically no "fish" odor. The fishy odor develops with time, but should not be strong or objectionable. Flesh is firm, elastic and not separating from the bones.

Fresh Fillets and Steaks: Odor is fresh and mild. Flesh is moist, firm, elastic and has a fresh-cut appearance without traces of browning or drying around the edges. Pre-packaged steaks and fillets are tightly wrapped with no liquid and little or no air in the packages.

Safe Handling after Purchase: Whether you've purchased fish that is fresh or frozen, always keep it cold. Never leave perishable items in a hot car unless packed in ice or in a cooler; seafood products must be kept cold to ensure peak quality. It's always a good idea to keep your refrigerator temperature between 32 to 38 °F, and your freezer at 0 °F or colder.

Storage

Refrigeration: Store fresh fish in its original wrapper in the coldest part of the refrigerator, which is under the freezer or in the "meat-keeper" drawer. Plan to use your fish purchases within one to two days. If not, freeze them. However, do not refreeze previously frozen products because the quality will suffer. For a more detailed summary of proper storage times for different fish products, refer to the table on page three.

Freezing: It is best to freeze fish in tightly wrapped package form. This takes less storage space and fits a family portion for one meal at a time. Fish freeze faster in tightly wrapped packages. Small whole fish, steaks or fillets (raw or cooked) are easy to prepare for packaged freezing. Prewrap them tightly and individually (double thickness if possible) in cling wrap, forming a tight skin on the product. Master-bag these individually wrapped items in a good, strong polyethylene bag or foil before freezing, but never more than a pound per master bag.

Large fish have large surface areas exposed, and they are difficult to protect from oxidation. The best way to handle these fish is simply to freeze them unwrapped or temporarily bag them in plastic. After freezing, dip them in water to form a protective glaze. Then you can rebag the fish and return it to the freezer. The glaze may need renewing every five to six weeks.

Label each package with the date, kind and type of fish and the weight and number of servings or pieces. A crayon or grease pencil is ideal for this purpose. Do not overload your freezer, and do not pack the unfrozen fish too tightly. Either of these practices can greatly extend the freezing time and reduce the quality. Most home-frozen fish should not be stored over six months, no more than three months for salmon. For a more in-depth summary of proper freezer storage times for fish, refer to the table below.

Preparation

Cleanliness: Always wash hands thoroughly with hot, soapy water before preparing foods and after handling raw fish. Don’t let raw fish or juices touch ready-to-go foods either in the refrigerator or during preparation. Don’t put cooked foods on the same plate that held raw fish. Always wash utensils that have touched raw fish with hot, soapy water before using them for cooked foods. Wash counters, cutting boards and other surfaces raw fish have touched.

Thawing: While freezing fish quickly keeps more cell walls intact, the opposite is true for thawing. Defrost gradually so cells are disturbed less and fewer juices leak out. The best way to thaw is overnight in the refrigerator. Avoid thawing at room temperature. If you must thaw fish quickly, here are safe options: seal fish in a plastic bag and immerse in cold water for about an hour, or microwave on the "defrost" setting, stopping when fish is still icy but pliable.

Marinating: Marinate fish in the refrigerator, not on the counter. Discard the marinade after use because it contains raw juices, which may harbor bacteria. If you want to use the marinade as a dip or sauce, reserve a portion before adding raw food.

Cooking

Guidelines for Cooking Fish: Cooked to perfection, fish is at its flavorful best and will be moist, tender and have a delicate flavor. In general, fish is cooked when its meat just begins to flake easily when tested with a fork and it loses its translucent or raw appearance. Like most foods, fish should be thoroughly cooked. The U.S. Food and Drug Administration (FDA) suggests cooking fish until it reaches an internal temperature of 145 °F.

One helpful guideline is the 10-minute rule for cooking fish. Apply it when baking, broiling, grilling, steaming and poaching fillets, steaks or whole fish. (Do not apply the 10-minute rule to microwave cooking or deep frying.) Practice makes perfect and cooking fish properly is all in the timing. Here’s how to use the 10-minute rule:

- Measure the seafood product at its thickest point. If the fish is stuffed or rolled, measure it after stuffing or rolling.
- At 450 °F bake for 10 minutes per inch thickness of the fish, turning the fish halfway through the cooking time. For example, a 1-inch fish steak should be cooked 5 minutes on each side for a total of 10 minutes. Pieces of fish less than half an inch thick do not have to be turned over.
- Add 5 minutes to the total cooking time if you are cooking the fish in foil or if the fish is cooked in a sauce.
- Double the cooking time (20 minutes per inch) for frozen fish that has not been defrosted.

Fish is the original "fast food." It cooks quickly, within minutes, because it lacks the connective tissue of red meats and poultry. Some of the best cooking methods for fish include poaching, broiling, grilling, baking and microwaving because they bring out flavor without adding fat.

Baking: Whole fish, whole stuffed fish, fillets, stuffed fillets, steaks and chunks of fish may be baked. Use pieces of similar size for even cooking. It’s best to bake fish in a preheated, 450 °F oven following the 10-minute rule; bake uncovered, basting if desired.

Broiling: Steaks, whole fish, split whole fish and fillets lend themselves well to broiling. Place fish, 1-inch thick or less, 2 to 4 inches from the heat source. Place thicker pieces 5 to 6 inches away. Baste frequently with an oil-based marinade. Using the 10-minute rule, cook on one side for half the total cooking time, basting once or twice, then turn the fish over to continue broiling and basting.

Grilling: This technique lends itself well to thick steak fish such as salmon, halibut, swordfish, tuna and whole fish. Preheat an outdoor gas or electric grill. If using a barbecue grill, start the fire about 30 minutes before cooking. Let it burn until white-hot then spread coals out in a single layer. Adjust the grill height to 4 to 6 inches above the heat. To grill fish, a moderately hot fire is best for cooking seafood. Always start with a well-oiled grid to prevent the delicate skin of the fish from sticking. Support more delicate pieces of fish in a hinged, fish-shaped wire basket for easier turning or handling.

Frequently baste steaks and fillets while grilling to prevent them from drying out. Marinating fish an hour before grilling also helps keep it moist. Apply the 10-minute rule for proper doneness. Use indirect heat for whole fish by banking hot coals on either side of the barbecue or preheat gas or electric grill. Oil fish well and place in an oiled fish basket. Cook fish covered, 10 to 12 minutes per inch of thickness, turning halfway through cooking time.

Microwaving: Use a shallow dish to allow maximum exposure to the microwaves. Arrange fillets with the thicker parts pointing outward and the thinner parts, separated by pieces of plastic wrap, overlapping in the center of the dish. Cover dish with plastic wrap and vent by turning back one corner. Allow 3 minutes per pound of boneless fish cooked on high as a guide. Rotate the dish halfway through the cooking time. Rolled fillets microwave more evenly and are less likely to overcook than flat fillets, which may have thin edges.

Serving

Basic Tips: Wash hands with soap and water before serving or eating food. Serve cooked products on clean plates with clean utensils and clean hands. Never put cooked foods on a dish that has held raw products unless the dish is washed with soap and hot water. Hold hot foods above 140 °F and cold foods below 40 °F. Never leave foods, raw or cooked, at room temperature longer than two hours. On a hot day with temperatures at 90 °F or warmer, this decreases to one hour.

Leftovers

Basic Tips: Always use clean utensils and storage containers for safe storage. Divide large amounts of leftovers into small, shallow containers for quick cooling in the refrigerator. For frozen storage, wrap fish in heavy foil, freezer wrap or place in freezer container. For optimum taste, use fish within a month. When reheating leftovers, make sure that they have been cooked to 165 °F. If you may have kept the food refrigerated for too long, throw it out. Never taste food that looks or smells strange to see if you can still use it.

Safe Handling of Fish in Cold Storage

Product	Refrigerator (40 °F)	Freezer (0 °F)
Fresh Fish	1-2 Days	2-3 Months
Cooked Fish	3-4 Days	1 Month
Frozen Fish	Use Immediately	3-6 Months
Lightly Smoked Fish (Like Salmon)	1-2 Days	Not Recommended; After 6 Months Loses Quality
Heavily Smoked Fish Kippered Cod, Smoked Whiting)	6-7 Days	Not Recommended; After 6 Months Loses Quality
Dried or Pickled	1 Week	Not Recommended; After 6 Months Loses Quality
Bisques, Broth, Chowders, and Stews	1-2 Days	3-6 Months

Sources:

1. The National Food Safety Database. Consumer *Tips for Handling Seafood Safely*, and *Consumer Tips for Purchasing High Quality Seafood*. Prepared by Robert Price, August 1990.
2. FDA Consumer Publication *Critical Steps Toward Safer Seafood*. November-December 1997.
3. Florida Agricultural Information Retrieval System *You Can Keep Fish Approximately* This Long. April 1998.
4. National Fisheries Institute Seafood Storage Guidelines for Consumers. and *Mastering Fish and Shellfish Cookery*: Practice *Makes Perfect*. © 1998.

This information has been reviewed and adapted for use in South Carolina by E.H. Hoyle, Extension Food Safety Specialist, Clemson University. (New 05/99.)

This information is supplied with the understanding that no discrimination is intended and no endorsement by the Clemson University Cooperative Extension Service is implied. All recommendations are for South Carolina conditions and may not apply to other areas. Use pesticides only according to the directions on the label. All recommendations for pesticide use are for South Carolina only and were legal at the time of publication, but the status of registration and use patterns are subject to change by action of state and federal regulatory agencies. Follow all directions, precautions and restrictions that are listed.

The Clemson University Cooperative Extension Service
offers its programs to people of all ages, regardless of race, color, sex, religion, national origin, disability, political beliefs, sexual orientation, marital or family status and is an equal opportunity employer.
Clemson University Cooperating with U.S. Department of Agriculture, South Carolina Counties, Extension Service, Clemson, South Carolina. Issued in Furtherance of Cooperative Extension Work in Agriculture and Home Economics, Acts of May 8 and June 30, 1914
Public Service Activities