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Home Preservation of Fish

Ensuring the quality of fish you want to preserve should begin as soon as the fish are caught. Fish bruise easily, so handle them carefully. Place them on ice immediately, then clean, dress, and wash them within 2 hours. Pack them in ice or refrigerate as soon as possible to prevent deterioration. Use fresh, iced fish within 1 to 2 days.

Freezing Fish

You can freeze all kinds of fish. Store fish at 0 degrees Fahrenheit (F) or below. Package fish in small or flat packages. To prevent dehydration and to lock in fresh fish flavor, package fish in airtight, vapor-proof packaging, such as aluminum foil, plastic freezer boxes with airtight lids, vacuum-sealed individual plastic bags, thick plastic freezer bags, or freezer papers.

1. Use fresh fish, cleaned and dressed.
2. Cut fish into serving pieces. Fish can be frozen whole or as portions. The most economical way

to freeze fish is in meal-size packages. To separate one frozen fillet or steak from another, insert a double layer of wax paper between fish portions when you package them for freezing.

3. Dip fish in either brine or an ascorbic acid solution, depending on the type of fish. Dip lean fish (flounder, cod, whiting, redfish, snapper, grouper, and most freshwater fish) in a mixture of 1/4 cup salt to 1 quart cold water for 20 seconds. Dip fat fish (mullet, mackerel, trout, tuna, salmon) in a mixture of 2 Tablespoons ascorbic acid to 1 quart cold water for 20 seconds.
4. Wrap or place fish in airtight, vapor-proof packages. To wrap fish, pull the wrap tightly around the fish, squeezing out any air pockets. Never freeze large containers of fish. A vacuum sealer may be used to seal individual fillets of fish. After vacuum sealing, store in the freezer. Be sure to mark the date when frozen on the outside of the package.
5. Store in freezer at 0 degrees F or below.

Table 1. Storage Time for Frozen Fish (at 0 degrees F)

Type of Fish	For Maximum Quality	Maximum Storage Time
Fat*	3 months	9 months
Lean**	6 months	12 months
Smoked	—	2 months
*Salmon, lake trout, rainbow, chubs, whitefish		
**Most Great Lake fish		

Individually Quick Frozen Fish

Spread fish or portions in single layers on flat pans. Cover with protective wrapping and place in freezer. When fish are frozen, remove and package in heavy plastic freezer containers. On the outside of the packaging, mark the date the fish were frozen. This method allows you to take out only as many fish as you need for a single meal. Wrap and return dated packages to the freezer.

Freezing Fish in Water

Water is the most effective airtight package. There are four good ways to store fish in water or water solutions.

1. Lemon-Gelatin Glaze

To prepare glaze, mix 1/4 cup lemon juice with 1 3/4 cups water. Dissolve one packet unflavored gelatin in 1/2 cup of the lemon juice and water mixture. Heat remaining 1 1/2 cups liquid to boiling. Stir dissolved gelatin mixture into the boiling liquid and cool to room temperature. Dip the cold fish into the lemon-gelatin glaze and drain. Wrap, label, and freeze.

2. Ice Glaze

Freeze whole fish or portions of whole fish in a protective plastic bag. Remove frozen fish from plastic bag, dip in ice water, and return to freezer. Repeat dipping and freezing until the ice glaze is 1/8- to 1/4-inch thick. Place glazed fish in airtight packaging, date, and return to freezer.

3. Ice Block 1

Place a single layer of fish in shallow pan. Cover with water and freeze solid. Remove block from pan, place in airtight packaging, date, and return to freezer.

4. Ice Block 2

Place a single layer of fish in a shallow container. Place pan in freezer overnight to freeze fish solidly. The next morning, cover the frozen fish with water and freeze. Remove frozen block from pan, place in airtight packaging, date, and return to freezer.

Thawing Frozen Fish

Thaw fish in refrigerator or under cold running, potable (clean and safety) water. *Never thaw fish at room temperature.*

Thawing times vary with the size of the fish, shape of the package, and with temperature. Typically, a pound of fish requires 6 to 8 hours to thaw in the refrigerator or 1 to 2 hours to thaw under cold water. Thaw fish only until it is pliable but still has ice crystals. Cook immediately.

Remove fish frozen in ice blocks by running cold water over them. When the fish can be freed

of ice, remove it and wipe dry. Cook immediately. If your recipe or cooking method requires totally thawed fish, remove the fish from ice, cover with aluminum foil or food wrap, and finish thawing it in the refrigerator.

Canning Fish

Use only half-pint or pint jars for canning fish; do not use quart jars.

The only safe way to process fish is in a pressure canner. Know your altitude and adjust processing pounds accordingly. Boil home-canned fish for 15 minutes in a covered pan before tasting or using. Boiling will destroy any *Clostridium botulinum*, the bacteria that causes botulism.

Fish that has been frozen may be safely canned. Thaw fish in the refrigerator and process as soon as it has thawed. Processing the fish promptly after thawing is essential for a safe product.

Canning Fresh Fish (Except Tuna)

The following canning directions apply to fresh fish such as blue mackerel, salmon, steelhead, and other fatty fish. It takes 25 to 35 pounds of fresh fish to fill about a dozen pint jars.

1. Clean and wash fish thoroughly. Remove the entrails, heads, fins, scales, and tails. The skin and dark flesh along the lateral line may be removed, if desired.
2. Cut into desired size pieces.
3. For a more attractive product, soak pieces in brine to remove blood and water from flesh (Brine recipe: 1 cup salt per gallon of cold water). Pieces 1/2-inch thick require an hour in the brine.
4. Fill hot, clean, pint or half-pint jars, skin side next to glass, leaving 1-inch headspace. If desired, add 1 teaspoon of salt per pint. *Do not add liquids.* Always raw pack fish. Process according to directions in Table 2.

Note: Glass-like crystals of magnesium ammonium phosphate sometimes form in canned salmon. There is no way for the home canner to prevent these crystals from forming, but they usually dissolve when heated and are safe to eat.

Table 2. Process Times for Fresh Fish

Jar Size	Process Time	DIAL GAUGE Pressure Canner		WEIGHTED GAUGE Pressure Canner	
		PSI at Altitude: 0–2000 ft	PSI at Altitude: 2001–4000 ft	PSI at Altitude: 0–1000 ft	PSI at Altitudes Above 1000 ft
Half Pint or Pint	100 minutes	11 lbs	12 lbs	10 lbs	15 lbs

Smoking Fish

The following directions for smoking apply to salmon, grayling, trout, and whitefish.

The five basic steps in smoking fish are cleaning, curing, drying, smoking, and storage. Wood smoke has little, if any, preservative action. Rather, wood smoke primarily adds flavor. Smoked fish should be kept at temperatures under 36 degrees F and used within 14 days. If smoked fish is to be kept longer than 14 days, it should be frozen immediately after smoking. Freezing smoked fish will not improve the quality of an already deteriorating product. Canning smoked fish is not recommended.

1. Cleaning

Clean fish as soon as possible after taking them from the water. Scale fish and remove viscera, including the kidney, which is the dark streak along the backbone. The head may also be removed from larger fish, but keep the collarbone to provide shape. Fillet or cut large fish into steaks.

2. Curing

Cure the fish in a brine made of 1 cup of salt to each gallon of cold water. Saltpeter is often added as a margin of safety against *Clostridium botulinum*. Here is one recommended sugar/spice brine:

- 1 gallon cold water
- 1 cup salt
- 1/2 cup sugar
- 1 teaspoon saltpeter (optional)
or sodium nitrate
- Cloves (optional)
- Bay leaves (optional)
- Pickling spices
(optional)
- Sage (optional)

Use a mixture of spices at the rate of 1 Tablespoon per gallon of water.

Place fish in a large nonmetal container so they lie flat. Cover with brine (one gallon to 4 to 5 pounds of fish). Use a plate or cover to weigh down fish. Submerge fish without packing them together. Allow fish to cure in the coldest part of the refrigerator (34 to 38 degrees F). See table below for brining times.

3. Drying

When fish are cured, remove from brine and rinse thoroughly in clear water. Dry fish in the smokehouse or in a protected area with heat and air circulation. Place fish on smokehouse hangers or racks wiped with vegetable oil and allow fish surface to dry. A shiny, skin-like layer will form on the fish surface. This layer seals the surface and prevents loss of natural juices during smoking.

Fish require approximately 1/2 hour of drying at 70 to 80 degrees F before smoking. Air circulation and humidity will affect the time. A fan will speed the drying process.

4. Smoking

Place fish in smokehouse. Clear all combustible material from around and under the smoking area. Form a small bed of coals on the hot plate for a small fire. Keep fire from flaring up. Cover the coals with dry hardwood chips. To prevent chips

Table 3. Brining Times

Size of Fish	Fresh	Refrigerated	Thawed
1/2- to 1-inch thick fillets or split fish	18–24 hr.	16 hr.	12–14 hr.
Large whole fish, 10 lb. or more	48–72 hr.	36–60 hr.	24–48 hr.

from flaming, lightly dampen them with water. Add chips as needed to keep the smoke dense throughout the process and regulate draft by adjusting vents or by raising and lowering the lid or side of the chamber. Use only hardwoods such as maple, oak, alder, hickory, birch, and other fruit woods for smoking the fish; conifers, softwoods, moss, and leaves may leave unpleasant tastes in the fish. Do not use fir, spruce, pine, or cedar.

Cold smoke (90 to 100 degrees F) for 2 to 3 hours, then gradually add hot coals to the smoker to raise the temperature of the smokehouse to 225 degrees F. Maintain this temperature until the internal temperature of the fish reaches 180 degrees F, which should take 3 or 4 hours. Hold the internal temperature for 30 minutes. Insert a thermometer into the thickest part of the fish to be sure all the flesh reaches this temperature. The total time required may be as much as 12 hours for whole fish.

When smoking is completed, remove the fish and allow them to cool. Keep fish protected from dust and insects; then wrap in waxed paper or plastic wrap and refrigerate. Use smoked fish within 14 days.

5. Storing

Smoked fish should be kept in the refrigerator below 36 degrees F and consumed within 14 days of smoking. For longer storage, the fish may be frozen immediately after smoking. Store smoked fish in the freezer for no longer than 2 months. Canning smoked fish is not recommended.

References

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