

## Cold Smoked Salmon Recipe Compilation

Main Recipe (1): Brined: <http://www.smoker-cooking.com/coldsmokedsalmon.html>

Additional Recipe (2): Brined, from Ed's Kasil of Seafoods: <http://www.kasilofseafoods.com/Smoking/cold-smoked-lox.htm>

Additional Recipe (3): dry rub version: <http://fastandfoodiest.com/?p=612>

Additional Recipe (4): [http://wps.prenhall.com/chet\\_sackett\\_cuisine\\_1/223/57168/14635207.cw/content/index.html](http://wps.prenhall.com/chet_sackett_cuisine_1/223/57168/14635207.cw/content/index.html)

*[N.B. Much of this write-up is used directly from Recipe (1), which was well-worded. However, there are many recipes out there, so I have rolled them into the document and made it a compilation.*

*In my opinion, recipes should be given in weights, not volumes. I have converted those in the compilation. Bulk densities of granulated substances and powders vary widely. (Weigh a tablespoon of kosher salt and a tablespoon of table salt if you don't believe me.) When in doubt, weigh out a volumetric amount from a recipe, then record and use that measurement in future work. Likewise, the percent salinity (% SAL) has been listed for you, so you can more readily compare recipes.*

*One major item of concern: few recipes on the internet or in published form use nitrite cure. According to the FDA and most serious meat-smoking authors/practitioners, nitrite should be used in order to prevent botulism when the meat stays at temperatures between 40 degF and 135 degF for a sustained period of time. Fish is no different. I have added 150 ppm of nitrite to all of the recipes summarized below, and include a quote from Marianski's "Home production..." advising so.]*

### Need for Nitrite

*(extracted from "Home Production of Quality Meats and Sausages" by Stanly Marianski and Adam Marianski) You may shake your head in disbelief, but here's a quote from Marianski's book, p.547, that give insight into how regulations are born.*

*"The Food and Drug Administration currently allows nitrite to be used in salmon, sablefish, shad, chubs, and tuna. Why out of millions of species of fish swimming in the ocean, only five species can be cured with nitrite? What made those fish so special was a question that bothered me for a long time. Finally I had enough and the letter of inquiry was sent to the Food Safety and Inspection service. And that was the answer to my intriguing question:*

*'The reason nitrite is approved for use in those species is because someone submitted a petition for its use in those specific fish. Other species can be added through additional petitions.'* "

Having said that, though, here is Matrianski's advice on nitrites in fish, p. 541.

*"Fish like any other meat is susceptible to food poisoning given the right conditions for the development of *C. botulinum* spores into toxins. Those conditions (lack of oxygen, humidity, temperature 40 degF – 140 degF) always exist when smoking meats. Furthermore, many times fish will be packed by the Reduced Oxygen Packing Method that can create favorable conditions for *C. botulinum* to become toxin even after fish was hot smoked and cooked. To eliminate the possibility of such a danger Cure #1 is added the same way it is used when making smoked meats or sausages.*

*"In order to eliminate nitrites (cure #1) the salt concentration in the water should be high enough to inhibit the growth of *C. botulinum* without making the product too salty to eat. A minimum concentration of 3% is considered to be effective for hot smoked fish. Also smoking and cooking temperatures should be kept above 180 degF (82 degC). People on a low salt diet who prefer low salt concentration in a product would be safer to include nitrites in the brine."*

## **Smokers For Salmon**

Correctly prepared cold smoked salmon never reaches a temperature above eighty degrees Fahrenheit. Technically, the fish is raw, but cured. A long bath in a highly saturated brine causes the proteins to denature...it modifies the structure of the salmon flesh. And in a sense, that's "cooking it" by way of a chemical process.

To make your own cold smoked salmon, you'll first need the right equipment. A "normal" meat smoker would be just too darn hot to cold smoke. If you have a wood burning pit smoker or a charcoal smoker, it'll have to sit this one out. If you have a little time and a little money, can build your own cold smoker using inexpensive items and your gas or charcoal grill.

## **Fish Smokers - Cold Smokers**

Choose your cold smoker wisely. Many "fish smokers" run too hot for making cold smoked salmon, though they are great for hot smoking salmon. *(details deleted.)*

## **The Salmon**

Fresh salmon and previously frozen salmon are not equals when it comes to cold smoking salmon. Freezing actually benefits the cold smoked salmon in a couple of ways.

- Freezing Ruptures Cell Membranes
- Freezing Kills Parasites

As the salmon freezes, the liquid in the cells expands, causing the cell walls to rupture. When thawed, liquid drains readily from the flesh, meaning there's less water for the brine to remove.

Freezing also kill parasites. One week at minus ten degrees Fahrenheit kills parasites that would otherwise survive brining and cold smoking. To be safe, deep-freeze cold smoked salmon that has been prepared from fresh, never frozen fish.

## **Choosing Your Salmon**

There are many types of salmon to choose from. King, coho, sockeye, chum and Atlantic are some of the commonly available salmons. For help in picking the best salmon out at the store, take a look at the topic "Buying Salmon." You'll learn that different salmons have different levels of oil (and flavor) in their flesh. There are also tips on how to pick out the freshest salmon for your smoker.

## **Preparing The Salmon**

Salmon fillets should be scaled and boneless. The fillets may have pin bones running down their length. If they do, a pair of pliers is all it takes to remove them. Here's how to do it. With light pressure, run your fingers along the flesh side of the fillet. If the pin bones are there, you'll feel the ends, evenly spaced between the head end and the tail end. As you find them, pull them out with the pliers...needle nose pliers work best.

The sides can be left whole if there's room in your smoker, or cut into smaller pieces. One and one-half to two inch wide chunks cut from the fillet is a good size. Either way, leave the skin on to hold everything together. Smaller pieces will brine and smoke more quickly, since a greater surface area of each section is exposed. Puncturing the skin or carefully scoring it with a razor blade will ensure more even brining and curing. Don't cut or puncture deeply, but go deep enough to expose the flesh.

## Cold Smoked Salmon Brine

### Wet Brine Recipes

Recipe (1) xx% SAL

- 1 1/4 cups (xx gm) Pickling salt OR 12 ounces Kosher salt
- xx gm Prague Powder (cure #1)
- 1 3/4 cups (xx gm) white sugar
- 1/4 cup (xx gm) maple syrup or molasses
- 2 cloves (xx gm) garlic, crushed
- 2 Tbs (xx gm) peppercorns, cracked
- 1 gallon water

Recipe (2) 80% SAL

- 14 cups (xx gm) of salt
- 7 cups (xx gm) of brown sugar
- xx gm Prague Powder (cure #1)
- Spices as desired
- 5 gallons (xx gm) water. Egg float test: about 80%. (Use a hydrometer.)

### Dry Rub Recipes:

Recipe (3) Dry Rub

- 1 cup (xx gm) kosher salt
- xx gm Prague Powder (cure #1)
- 1/2 cup (xx gm) sugar
- 1/2 cup (xx gm) brown sugar
- tablespoon (xx gm) fresh ground pepper

Recipe (4) Dry Rub for 3 lbs of fish (24 – 48 hrs.)

- 8 oz. (xx gm) kosher salt
- 4 oz. (xx gm) sugar
- 1 Tbsp. (xx gm) granulated onion
- 1/2 tsp. (xx gm) ground bay leaf
- 1 tsp. (xx gm) ground allspice
- 1 tsp. (xx gm) ground nutmeg
- 1/2 tsp. (xx gm) ground cloves
- 1/10 oz. Prague Powder (cure #1)

### More Wet Brine Recipes

(Recipe(4) for Wet Brine) xx% SAL

Basic Brine for Mild-Flavor Fish to be Smoked *Yield:*

*1 gal. (for 10 lb. fish)*

- 12 oz. kosher salt
- xx gm Cure #1
- 2 lb light brown sugar
- 2 qt. distilled water

(Recipe(4) for Wet Brine) xx% SAL

Seasoned Brine for Strong-Flavor Fish to be Smoked

*Yield: 1 gal. (for 10 lb. fish)*

- 8 oz. kosher salt
- xx gm Cure #1
- 5 oz. light brown sugar
- 1/3 c.. fresh lemon juice
- large bunch coarse-chopped dill
- 2 Tbsp. minced fresh garlic
- 2-1/2 qt. distilled water

**Preparation:** Combine all of the ingredients in a large pan

- Wet Brine Recipe (1): and heat to a boil. Simmer for five minutes, cover the pan, and then cool to room temperature.)
- Wet Brine Recipes (1) & (2): Try to float an egg in the brine. If it doesn't float, mix in another 1/4 cup of salt. Test again with the egg. Again, if it doesn't float, add another 1/4 cup of salt. Repeat until the egg floats. Refrigerate the brine until it is 40 degreesF or less before adding the salmon.)
- Dry Rub Recipes (3) & (4): Lay down a large sheet of aluminum foil, cover it with a few layers of plastic wrap, and spread about half of the mixture on top. Lay down a large skinned piece. If using multiple pieces, do it in layers, with mixture in between each and on top. Roll the plastic wrap tightly over the fish, then the aluminum foil, to make a tight package.)

## Brining The Salmon

Wet Brine Recipes: The brine must be between 35F and 40F. Too cold and it slows the brining reactions, and if too warm it could allow bacteria to grow...over 40F is getting into the Food Danger Zone. The salmon now goes into the brine where it remains from

- (Recipe (1): 6 to 12 hours)
- (Recipe (2): 12 to 24 hours.)
- (Recipe (3): Turn the wrapped fish over after about 12 hours, then leave it in the fridge for another 12 hours.)

The brining time is variable due to a couple of factors...thickness, and whether it was previously frozen. The thicker the fillets are, the longer they'll need to brine. If previously frozen, decrease the brining time.

(Recipes (1) & (2): Now the excess salt needs to be rinsed from the salmon. Remove the salmon into a clean container, or reuse the rinsed out brining container. The salmon needs to be rinsed for (Recipe (1): one-half hour) (Recipe (2): 1 to 2 hours.) to remove the excess salt. Allow water to run constantly into the container throughout the rinse time. Gently agitate the salmon every few minutes during the rinse, and be gentle with the salmon, since it can break up easily at this stage.

(Recipe (3): Single rinse, no time called for.

Dry thoroughly.

Now the fun part...it's time to taste test for saltiness. Go ahead! Try a piece of it raw! But if you don't want to, don't fret. Slice off a piece and gently cook it in the microwave before you taste. If it's still too salty, rinse it for another ten to fifteen minutes, but no more, or it will begin to absorb water.

## Curing and Pellicle Formation

The salmon must now be allowed to cure. Place the fish on a rack and let it rest in the fridge, uncovered, for 12 hours. At this time, you can also add spices or herbs to the salmon for flavor and appearance. (Various recipes suggest a little gin or scotch, cracked juniper berries, or dill, similar to gravlax recipes.) As the salmon cures, the remaining salt in the flesh evenly redistributes, preventing you from having salty-centered salmon. The proteins start to bind together, and the salmon dehydrates a bit, too, which both need to happen before it hits the smoker.

This is also when the pellicle forms. The pellicle is a dry, thin layer of proteins that were liquefied during brining. When it's formed, you'll see a semi-glossy, clear coating on the fish. The pellicle prevents large amounts of liquid from oozing out of the salmon as it smokes, which would create whitish curds on the surface...unattractive, but harmless.

## Wood Types (from Recipe (4))

The distinctive aroma and flavor of indigenous woods are integral elements of America's regional smoked products. For authentic traditional flavor, use the wood of the region from which the dish hails.

- Alder: Indigenous to the Pacific Northwest, alder is the traditional wood used by Northwest Native Americans for planking and smoking salmon. Alder has an elusive, subtle flavor best applied to delicate foods treated with light cures.
- Fruitwoods: Although apple and cherry are most popular, other natural fruitwoods such as pear, peach, and even citrus woods provide flavorful smoke. Fruitwood flavors marry well with light meats such as pork and poultry, and also complement fish. Chicken with cherry wood and brook trout with apple wood are classic combinations.

- Hickory: Essential for the true taste of classic Southern barbeque, hickory produces smoke with a robust flavor ideal for tough and flavorful cuts of pork such as hams, bellies, picnics, butts, and ribs.
- Maple: The distinctive taste of maple smoke traditionally flavors sugar-cured slab bacon and Canadian bacon, but also complements poultry.
- Mesquite: This scrub wood is extensively used in the Southwest for smoke-roasting and grilling. *Take care when cold-smoking with mesquite, as this smoke can cause a bitter flavor when applied for extended periods.* Mesquite is processed into excellent charcoal.
- Oak: Several varieties of oak are favored throughout the United States for both smoke-roasting and cold-smoking. Black jack oak is a distinctively flavored wood prevalent in the deep South and in northern Florida, where it often replaces hickory.
- Pecan: Pecan wood has a light, mellow flavor; it also substitutes for hickory.
- Flavored specialty woods: Sold by companies specializing in grilling and smoking products, these woods are often processed from barrels and vats used in the production of bourbon, wine, or even Tabasco™ sauce. It is debatable whether the flavor they impart is either true to type or worth the considerable expense.

### **Smoking the Salmon**

So are you ready? Let's smoke! Make sure there's plenty of space around each piece of salmon for air and smoke to circulate. Leave space around the outer edges of the rack, too. Put the rack in the smoker, and start it up.

(Recipe (1): When using the Bradley smoker, make sure to unplug the heating element and use only the smoke generator.) (Recipe (2): set the temperature to 70 F.) Recommended woods: maple, alder, hickory, apple, pecan.

The cold smoked salmon will be done in (Recipe (1) twelve to sixteen hours.) (Recipe (3): Smoke for as long as you can stand... usually 5 to 8 hours.) (Recipe 4: 1 hour 20 minutes to 2 hours per lb.) The salmon will slightly dry while smoking, and become a bit firmer to the touch. Continue smoking if you'd like a more intense smoky flavor.

### **Storage:**

If you don't have a vacuum food sealer, by all means find one. Vacuum storage is the ideal way to pack cold smoked salmon. After sealing your smoked salmon, refrigerate it for short term storage, or freeze it to enjoy year around. Making cold smoked salmon at home requires specialized equipment and knowledge. With these, and patience, you can create healthy and delicious cold smoked salmon.