

The Food Lab's Complete Guide to Sous Vide Shrimp

J. KENJI LÓPEZ-ALT

Shrimp cooked by traditional methods can be fantastic, but nailing the perfect temperature requires precision. Let them cook just a few seconds too long—whether poaching, searing, or grilling—and they go from tender and plump to rubbery and tough. With a sous vide cooker, you don't have this issue because that short window of time between perfect and overcooked stretches out to a good half hour or so.

Sous vide also allows you to achieve textures that you can't really achieve through more traditional methods. These textures aren't necessarily better or worse per se, they're just different, which in my book makes sous vide a useful technique to add to your arsenal.

Traditionally poached shrimp, like the kind you'd serve [in a shrimp cocktail](http://www.serious-eats.com/recipes/2015/07/shrimp-cocktail-recipe.html) (<http://www.serious-eats.com/recipes/2015/07/shrimp-cocktail-recipe.html>), lose some of their flavor to their poaching liquid. It gets leached out and dumped down the drain. For this reason, it's common to use a *court bouillon*—a quick stock flavored with lemon, wine, and aromatics—which adds back some much-needed flavor. A court bouillon is fast to make, but it requires several ingredients. The beauty of sous-vide is that when placed in a plastic bag, shrimp lose very little flavor and come out tasting extra-shrimpy and flavorful without the need for flavorings.

But that's not to say that you can't add other aromatics if you'd like. Cooking sous vide affords you the opportunity to infuse the shrimp with flavor while they cook. In this guide, I'm offering both a simple poached shrimp recipe, as well as a recipe for shrimp flavored Spanish-style with garlic, olive oil, sherry, and smoked paprika.

Temperature and Timing

Existing guides for sous vide shrimp are all over the place in terms of temperature and timing, so I decided to test temperature at five-degree intervals ranging from 115°F (46°C) up to 150°F (66°C). I found that any lower than 125°F (52°C) and your shrimp stay unpleasantly soft and mushy. Above 140°F (60°C), they start to become tough and rubbery. The 125°F to 140°F range is the sweet spot.

On the lower end of that scale, the shrimp remain slightly translucent inside and have a very soft, almost buttery texture, somewhere between a poached shrimp and raw shrimp ceviche, but without the unpleasant sliminess of completely raw shrimp. At 140°F, you end up with shrimp that have the texture of traditionally poached shrimp



Here are the temperatures I'd recommend cooking your shrimp to



Sous Vide Shrimp Cooking Temperature

125°F (52°C)

Translucent and semi-raw with a soft, buttery texture.

130°F (54°C)

Nearly opaque and very tender with a hint of firmness.

135°F (57°F)

Barely opaque, moist, juicy, and tender.

140°F (60°C)

Traditional poached texture with good bounce and a snappy, juicy bite.

As for timing, about 15 minutes is enough to cook the shrimp through completely. You can leave them in the water bath anywhere up to an hour or so with no ill effect... most of the time.

The Worst Case Scenario: Mushy Shrimp

In some rare cases cooking for longer than half an hour or so may result in shrimp that come out soft. I mean *really* soft. It has to do with enzymes called proteases that occur naturally within the shrimp, mostly concentrated near their heads. These enzymes are like little wrecking balls that target proteins. In live shrimp, those enzymes are kept in check and controlled. But once the shrimp dies, they can run rampant, completely breaking down the shrimp's structure.

If you get your shrimp live, it's easy to manage. Kill the shrimp by freezing them, then immediately remove their heads to prevent the spread of the unwanted enzymes. If you are buying your shrimp already-dead, I strongly suggest buying shrimp that are packed *without* their heads. Shrimp sold with their heads on have a higher chance of coming out mushy, though even de-headed shrimp can fall victim occasionally. This is a rare case where more processing before point-of-sale leads to a superior product in the pan.

My friend, Chef Chris Young of ChefSteps, [also explains that](https://twitter.com/ChefChrisYoung/status/805105421492961280) (https://twitter.com/ChefChrisYoung/status/805105421492961280) the degree of starvation and molting before death can have an effect on proteases, though I haven't had the

opportunity to test this out. Either way, you want to make sure to limit cooking to under half an hour just in case you have one of those mushiness-prone shrimp.

Just as an experiment, I decided to see what would happen if I cooked an active-protease shrimp for an extended period of time—12 hours. Here's what happened:

It's seriously disgusting. Don't try this at home if you want to keep your lunch.



Want Plumper, Snappier Shrimp? Use Baking Soda

What I really want in shrimp is the opposite of mushy. I want them tender and plump, to be sure, but I also want them to have a snappy, springy bite to them. The real secret here is baking soda. It's a trick I picked up from Chinese recipes in which shrimp are sometimes tossed with an alkaline marinade before frying. I'm not sure of the mechanism involved and have not been able to find any resources that could explain it, but I do know that it works.

Just toss the shrimp with a little baking soda (about a half teaspoon per pound) 30 minutes or so before cooking sous vide and they come out noticeably plumper and firmer after cooking.





What About Flavorings?

The great thing about cooking shrimp sous vide is that they come out super sweet and shrimpy-tasting because you are not diluting or washing away flavor with extra liquid. It's worth mentioning that you can cook your shrimp with or without their shells; shell-on shrimp will be even more flavorful, but you'll either have to shell them afterwards or have your guests do it at the table. If you do cook the shrimp with their shells, add five minutes to the minimum cooking times above.

If you'd like to add other flavors, sous vide is also an ideal method. It could be as simple as some good extra-virgin olive oil or butter along with some fresh aromatics like garlic, shallot, parsley, or tarragon. Or you can get more creative. I'm particularly fond of cooking shrimp Spanish style with garlic, sherry, olive oil, and smoked paprika (okay, the paprika is not necessarily a common ingredient with shrimp, but it comes out really tasty).

I start by infusing plenty of extra-virgin olive oil with sliced garlic over low heat until the garlic is tender but not browned, then I add a couple of dried bay leaves and some smoked paprika.

As soon as the paprika smells nice and toasty, I add a splash of sherry and sherry vinegar, along with a couple pats of butter.

I dump this flavorful liquid right in with the shrimp, which I then lower into the preheated water bath.

In just 15 minutes (or up to 30 minutes), you wind up with shrimp that are packed with incredible flavor and are perfectly plump and juicy.

If you want an extra flourish, you can preheat a cast iron skillet on the stovetop and empty the contents of the bag directly into it. Make sure your guests are ready to eat as soon as the sizzling platter hits the table, and don't forget some bread to sop up the delicious sauce!



Disclaimer: This guide was produced for Serious Eats and licensed to Anova Culinary, makers of the [Anova Precision Cooker](http://store.anovaculinary.com/products/anova-precision-cooker/) (<http://store.anovaculinary.com/products/anova-precision-cooker/>), for use on their app. [Download the Anova app](http://anovaculinary.com/serious-eats-partnership/) (<http://anovaculinary.com/serious-eats-partnership/>) for built-in temperature and timing guides, along with full Bluetooth control over the [Anova Precision Cooker](http://store.anovaculinary.com/products/anova-precision-cooker/) (<http://store.anovaculinary.com/products/anova-precision-cooker/>). Serious Eats receives no revenue from sales of the device nor from downloads of the app.

