


Time, Temp, and Taste

Cooking Food to Safe Temperatures Without Compromising Quality

FOOD PROTECTION CONNECTION



Strategies to help you serve safe foods without ruining them

Your chicken breast is as dry as sidewalk chalk, your sauce is broken, with a thick layer of oil on top, and your green beans no longer have any right to the name “green” or possibly even “beans,” as they’ve dried to crunch levels more appropriate to cereal than side dish. The residents blame the chef, the chef blames the day cook, and the day cook blames the minimum temperature rules she is required to follow for safe cooking and holding.

This nightmare scenario is tragically common in institutional food service today. We place a ton of emphasis on food safety, internal temperatures, and hot holding—and we should! After all, great-tasting chicken that gives you salmonella will not likely be remembered as a pleasant dining experience.

Good news is here! Adhering to the rules doesn’t mean turning your chicken into shoe leather or your colorful vegetable blends into the sepia tones of an 1800s photograph. This article will give you some information and strategies to help you continue to serve safe foods *without* ruining them.

MINIMUM INTERNAL TEMPERATURES AND WHITE MEAT

Chicken breast. It’s cheap, versatile, and ubiquitous—and a potential source for many a bad comment card. There is a “Goldilocks Zone” of doneness for cooking chicken breast, where it is safe to eat yet still retains the juices and flavors that make it palatable. This is no problem when cooking short order or on demand. The challenge comes when cooking large



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amounts of chicken ahead of time, holding it at a certain temperature, and serving it en masse to your population.

I am a huge fan of serving dark meat chicken instead of white. Dark meat chicken is better when cooked to 170°-175°F, and the additional connective tissue in the meat only adds to the flavor and moisture level when held over 140°F as it continues to break down. Dark meat is not always an option though. Resident preferences, aesthetics, or recipe guidelines may require white meat. Ask any chef or cook what temperature chicken must be cooked to and they will (hopefully) say 165°F, and that is good knowledge to have. All Salmonella will be killed instantly at this temperature. (Earl, 2019)

Unknown to most folks is the concept of *thermal death time*. Thermal death time may sound like the worst game show ever, but it is the concept that killing all the bacteria is a *function of time as well as temperature*. This is how pasteurized eggs can be heated to kill bacteria without cooking the eggs themselves.

You can safely cook poultry to 145°F, *but you have to keep it at this temperature for 9.2 minutes* (Note: chicken will still appear pink if cooked lower than 145°F), or 155°F for .8 minutes, or 160°F for .2 minutes. (López, 2020)

If your chicken is going into a hotbox after cooking, then you might not need to go all the way to 165 degrees. This is before even discussing the concept of carryover cooking, where the temp at the center will continue to rise after you take the bird out of the oven as the hotter outside reaches equilibrium with the cooler center. With some attention to detail, you can fine-tune this and avoid serving chicken that feels like you're chewing on paper towels.

If you are not convinced and still insist on going all the way to 165°F, remember that just



because 165 degrees is good, 185 degrees is *not* better. Also know that you can always cook it longer, but there is no process known to the laws of physics that will reverse the cooking process, so check temps early and often. Charts and resources on thermal death time are available for just about everything you could want to cook, and many things you won't, from canning clams to pork loins.

BROKEN SAUCES

When making sauces and gravies from scratch, regardless of whether you are using a flour and butter roux or a cornstarch slurry, heat is required to activate the starches. Care must be taken not to overheat the sauce after it thickens! In the case of cornstarch, you may find that it has gone thin again, with the starches burnt onto the sides and bottom of your pan. Roux-based sauces may separate as the starch and butter stop cooperating and go their separate ways. This shouldn't happen if you

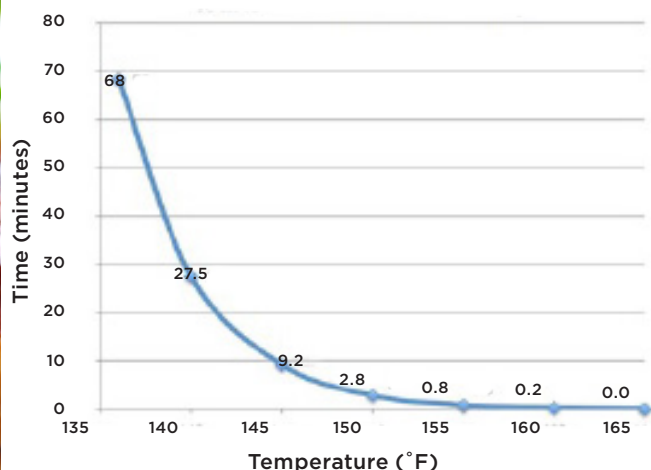
THERMAL DEATH

TIME may sound like the worst game show ever, but it is the concept that killing all the bacteria is a function of time as well as temperature.

remove the sauce from the heat source as soon as it begins to boil. Mind the temperatures of your hot holding equipment. Steam wells are great but can still be hot enough to break sauces over time, so don't crank that dial to 11. Hot boxes, shams, and dry heat wells can get hotter than the surface of Venus, so monitor your temps. Do this

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Pasteurization Time for Poultry



not just to ensure that they meet the minimum holding temps, but to make sure they don't go too much higher. As stated above, if meeting the minimum temperature is good, then far exceeding it is not automatically better.

If you are about to argue that you receive a lot of cold food complaints and serving food at 185°F is a must at your facility, let me stop you right there. The safe threshold for contact with human skin for longer than 5 seconds is 140°F, so if you're serving food at blistering temps,

there may well be some actual blistering. In every operation I have ever managed, we were able to eliminate cold food complaints, not by serving molten lava, but by using heated plates and mugs for food and coffee. Room temperature plates and mugs are sitting at 68-72°F and will easily drop the temperature of the food or drink they contain by 10 or 15°F before they reach the table. The plate will feel cool to the touch to your clientele and reinforce the impression of cold.

Some sauces you shouldn't even attempt to hold hot. In the case of Hollandaise, for example, use only pasteurized egg yolks, and just commit to throwing it away every

two hours. If you opt for the powdered hollandaise mix, you will have a little more leeway, but you will have to spend the rest of your life hiding that fact from your fellow chefs, living a lie, and crying yourself to sleep.

VEGETABLES

Vegetables can fall victim to some heinous crimes in the name of food safety. When they spend too long under heat, they lose their vibrant color and visual appeal, their texture, and most of their nutritional content. Vegetables should be cooked close to the time of service, in batches during service if possible, and never held at temperatures higher than necessary. If you have a steamer, use it. Steaming vegetables means you don't have to add oil or fat, it preserves more of the vitamins and nutrients, and it will not dry out your product. (La Gourmeta, 2015)

Roasting, sautéing, and other dry heat methods of cooking vegetables are great for more dimensions of flavor and aroma that come from the Maillard reaction. However you cook them, remember that the clock is ticking as soon as they're hot. Different cooked

vegetables will hold better than others.

If you are cooking vegetables fresh, you can blanch them for 30 or 60 seconds in boiling water, then immediately shock them in ice water. This will fix their bright colors, making them more resilient to later cooking. This is also a great trick to extend the shelf life of fresh veggies. Got a case of broccoli in the cooler nearing the end of its shelf life? Blanch and shock that broc! You'll bring it back to a beautiful verdant green *and* get another seven days to figure out what to do with it.

Cooking safe food doesn't have to mean cooking bad food, as long as you pay attention to what you're doing. Remember, treat your minimum internal temperatures as maximum internal temperatures. If 165°F is the minimum, don't aim for 180, aim for 165. Learn more about thermal death times for your pork, chicken, and beef dishes. Don't abuse your sauces. Do not set your hot holding equipment at 200°F.

I will end this with a confession: I absolutely love powdered hollandaise sauce mix. **E**

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SAN CE Questions | FOOD PROTECTION CONNECTION



This Level 1 article assumes that the reader has introductory knowledge of the topic. The desired outcome is to ensure a basic understanding and explanation of the concepts of the subject matter and recalling of related facts.

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1. Chicken cannot be safely cooked without drying it out.
 - A. True
 - B. False
2. Thermal death time is:
 - A. A death metal band focused on food safety
 - B. The combination of time and temperature needed to eliminate pathogens
 - C. The time it takes good food to turn bad in hot holding
3. Steaming vegetables:
 - A. Preserves more of the vitamins and nutrients
 - B. Won’t dry out the product
 - C. A and B
4. Sauces can break from being held at a very high temperature.
 - A. True
 - B. False
5. Minimum internal cooking temps are:
 - A. The lowest temperature you can safely cook the food
 - B. The ideal air conditioning setting for kitchen safety
 - C. Short-term staff hired to promote HACCP
6. The cooking process:
 - A. Can be halted but not reversed
 - B. Can be reversed, so don’t worry about overcooking
 - C. Can be reversed with an inverse tachyon pulse if we divert power from the warp drive, Captain
7. Serving soup that is still boiling is:
 - A. Unsafe and could result in injury
 - B. The only way to serve soup
 - C. Still not hot enough, put it in the microwave

Certified Dietary Manager Now Recognized as Approved Occupation for Registered Apprenticeship

In late December 2021, the U.S. Department of Labor informed the Urban Institute and ANFP that the Certified Dietary Manager is now recognized as an Approved Occupation for Registered Apprenticeship and this identifies the CDM, CFPP credential.

ANFP is working with the Urban Institute to complete the criteria and guidelines for employers to follow when placing an Apprentice in the Young Apprenticeship Program. ANFP will provide more information as it becomes available.