

\$3.99

Turkey Outdoors Made Easy

**The Best Turkey Of Your Life
Grilled, Smoked, Or Deep Fried
And Side Dishes For Thanksgiving
With More Than 25 Great Tested Recipes
Including Authentic Disney Turkey Legs**

version 2.0



By Meathead & Brigit Binns



A DEEP DIVE GUIDE FROM
Meathead's AmazingRibs.com



TURKEY OUTDOORS MADE EASY

THE BEST TURKEY OF YOUR LIFE GRILLED, SMOKED, OR
DEEP FRIED, AND SIDE DISHES FOR THANKSGIVING
WITH MORE THAN 25 GREAT TESTED RECIPES
INCLUDING AUTHENTIC DISNEY TURKEY LEGS



MEATHEAD

with

BRIGIT BINNS

with

CLINT CANTWELL



COPYRIGHT

Published By Meathead's Deep Dive Guides

Produced by the team at

Meathead's AmazingRibs.com

Version 2.0

Copyright © 2021 by Meathead's AmazingRibs.com, all rights reserved.

Please support and respect our hard work and expense by buying only authorized editions of this book and by complying with copyright laws. Unless otherwise noted, everything in this book, including all text, photos, and recipes, are copyrighted © by Meathead's AmazingRibs.com and are fully protected by US copyright law. This means you need our written permission to publish or distribute anything in this book or else you have committed a Federal crime. That means no copying, scanning, reproducing, or distributing any portion of this book or our website without our prior written permission except in the case of brief quotations as permitted by US copyright law.

But we're easy and permission isn't hard to get.

For permission requests, contact meathead@amazingribs.com

[More Deep Dive Guides here](#)

[Click here to subscribe to our free email newsletter Smoke Signals](#) and be notified when the next Deep Dive Guide is published.

TABLE OF CONTENTS

- I. ABOUT DEEP DIVE GUIDES
- II. INTRODUCTION
 - 1. About Meathead
 - 2. About Brigit Binns
 - 3. Special thanks to
 - 4. About Meathead's AmazingRibs.com
 - 5. About The AmazingRibs.com Pitmaster Club
 - 6. Stay in touch
- III. SAFETY FIRST
 - 7. Spoilage
 - Bacteria
 - Viruses
 - Parasites
 - How do foods get contaminated?
 - Making food safe
 - 8. Storing raw meats
 - 9. Washing food and cutting boards
 - 10. Hazardous foods
 - Food allergies
 - Other hazardous foods
 - 11. Is pink meat safe?
 - 12. What about red or pink juices?
 - 13. Knife safety
 - 14. Grill, smoker, oven, and stovetop safety
- IV. SCIENCE
 - 15. Meat science
 - Muscle cells
 - Connective tissue
 - Fats
 - Slow twitch vs. fast twitch muscles
 - Brown is beautiful, black is bad
 - Pretty in pink
 - What happens when you cook?

16. Salt: The Magic Rock!
17. Wet brine
18. Dry brine
19. Brinerades and the truth about marinades
20. Injecting
21. Seasonings and rubs
22. Don't try to bring it to room temperature
23. No resting
24. 3 types of energy and 2-zone cooking
The 3 types of energy
The importance of 2-zone cooking

v. TOOLS

25. Charcoal grills
26. Gas grills
27. Smokers
28. About wood
29. The ABCs of fire extinguishers
30. Cook with a thermometer, not a clock
Cook with a thermometer, not a clock
31. Sous Vide Que
32. Additional tools
Tongs
A silicone sauce brush
A good cutting board
A fillet knife
A rib holder
18-inch wide heavy duty aluminum foil
A lounge chair
A six-pack of beer
A good book
Tunes

vi. THE MEATHEAD METHOD

33. About the bird
34. White meat vs. dark meat
35. Common domestic turkeys
36. Wild turkeys
37. Heritage breeds
38. Ben Franklin and "The National Bird:" The true story
39. How big a bird do you need?
40. What you need to know about turkeys before you go shopping

41. Pre-salted birds
42. Label claims
43. Fresh or frozen turkey?
44. Thawing turkey
45. Cooking a frozen bird in an emergency
46. Salting, wet brining, dry brining, and injecting
47. Butterballing the meat
48. Handle raw turkey like kryptonite
49. Use herbs and spices
50. Don't stuff it
51. Don't truss the legs
52. Spatchcock it
53. 2-zone setup
54. Setting up your smoker
55. Setting up your indoor oven
56. Get the bird above the pan
57. Build the gravy beneath the bird
58. Don't cook breasts down
59. Add wood, but not too much
60. Don't baste
61. Cooking pieces
62. Rotisserie cooking
63. Vertical roasters work
64. Close smoking
65. Cooking and doneness temperatures
66. Don't overheat, don't overcook
67. Please use digital thermometers
68. Serving temperature
69. Plan for carryover cooking
70. Do not rest or tent with foil
71. Taking your bird over the river and through the woods
72. How to carve a turkey
73. Why Thanksgiving is special, and fighting the War on Thanksgiving
74. Wine for turkey
With a hint of sweetness
Drier wines

VII. RECIPES

75. Simon & Garfunkel Rub
76. Kansas City Classic BBQ Sauce
77. Hawaiian Huli-Huli Teriyaki Brinerade And Sauce
78. The Ultimate Turkey

Seasoning

Finally! Let's Cook That Bird!

79. Granny's Gravy
80. Turkey Parts
81. That Valuable Carcass
82. Breasts Only
83. Drumsticks Only
84. Disney Style Drumsticks
85. Sous Vide Que, A High Tech Turkey Recipe
86. Spatchcock Turkey With Sage Butter
87. Deep Fried Turkey
Dealing with the leftover oil
The proper setup
88. Thanksgiving On A Bun
89. Turketta: Stuffed And Smoked Turkey Breast
90. Smoked Turkey Pot Pie
91. Turkey Fajitas With Creamy Avocado Sauce
92. Leftover Turkey Salad
93. Stuffing, Dressing, And Muffings
94. Easy Southern Biscuits That Just Can't Fail
95. Here are some other recipes you might want to try with your turkey dinner

VIII. CHECK THIS OUT

Meathead's Amazing Seasonings & Dry Brines

PART I ABOUT DEEP DIVE GUIDES



“This is my invariable advice to people: Learn how to cook – try new recipes, learn from your mistakes, be fearless, and above all have fun!”

— JULIA CHILD



[Deep Dive Guides](http://AmazingRibs.com) is the ebook imprimatur of Meathead’s AmazingRibs.com. It is a growing series of ebooks in which

we have attempted to share our breadth and depth of experience on a culinary topic. They are designed to give you an inexpensive deep dive into a topic so you come away knowledgeable and confident. They contain numerous links to pages on the internet and videos. You will enjoy this book best if you read it while you are connected to the internet.

Some of this content is scattered among the 2,000+ pages on Meathead's AmazingRibs.com. Although websites are great references, they are not great learning environments, not nearly as good as books. We think that binding together carefully edited articles in an organized flow from start to finish in book format, is a far better way to learn than from articles scattered around on a website.

Some of this info appears in other Deep Dive guides because we think that it is important that they all contain foundational info on such things as meat science, safety, tools, etc. So we have included the most important info within these pages, and written new, previously unpublished, related info. Enjoy!

PART II INTRODUCTION



Photo by Clayton Kliever

“Thanksgiving is an emotional holiday. People travel thousands of miles to be with people they only see once a year. And then discover once a year is way too often.”
Johnny Carson

Turkey – it's America's bird, the apple pie of poultry! Most of us relegate turkey to the Thanksgiving or Christmas table only. Try as we might, we at AmazingRibs.com just can't understand this! Turkey, when properly cooked, is flavorful, moist, versatile and a veritable magnet for flavor. We enjoy it year round. But it is tricky to cook. Slip up and the breasts are as dry as cardboard and the skin is flabby as a burst balloon. Within these pages we share the tricks of a scrumptious smoky bird, tender and moist, with crisp skin, as well as how to cook just breasts, or legs, or turkey burgers, as well as stuffing, even mouthwatering Disney Turkey Legs.

It's also a generous bird and with size comes economy. You can feed a crowd for a reasonably small outlay of cash. Think you don't have enough guests to justify serving an entire turkey? Choose a smaller bird, say 11 or 12 pounds. These smaller birds tend to be more delicious and cook faster and more evenly on the grill and/or smoker. Or buy just a turkey breast or legs. Or just cook a big bird and revel in the leftovers.

Confused by the references to "Heritage" and "Heirloom" breeds of turkey? Let us explain. Sticking with Butterball or another big national brand? We've got you covered.



We know it: Many of you have come to this guide to ensure success with the Thanksgiving dinner. We are totally here for you. One important word of advice right upfront: Do not take risks with Thanksgiving dinner! Follow this advice:

“Let not your learning exceed your deeds lest you become like a tree with many branches and no roots.” Old Yiddish Saying

Practice before the big day. You’re allowed to eat turkey outdoors in Summer. Remember the old riddle? How do you get to Carnegie Hall? Practice! Practice!

Allow turkey to stroll onto your year-round menus and you’ll be a convert, just like we are! Meanwhile: Isn’t it always time for Thanksgiving?

Later in this Deep Dive Guide you’ll find great recipes for Big Bird, but let’s start with some general concepts on

technique, the Meathead Method.

ABOUT MEATHEAD



*M*eathead is the barbecue whisperer, hedonism evangelist, and mythbuster who founded [Meathead's](#)

AmazingRibs.com, by far the world's most popular outdoor cooking website. He is a BBQ Hall of Famer and the author of "[Meathead, The Science of Great Barbecue and Grilling](#)", a *New York Times* Best Seller that was also named "One of the 100 Best Cookbooks of All Time" by *Southern Living* magazine, one of "22 Essential Cookbooks for Every Kitchen" By SeriousEats.com, and one of the "25 Favorite Cookbooks of All Time" By [Christopher Kimball's Milk Street](#).

He was previously a syndicated wine critic for the *Washington Post* and *Chicago Tribune*. He has taught at Cornell University's School of Hotel Administration in Ithaca, NY, and Le Cordon Bleu in Chicago, and he has judged food, wine, beer, and spirits around the world. He lives in the Chicago area with his wife, a PhD microbiologist and a food safety expert, so if you dine at his house you will eat and drink well, and safely.



ABOUT BRIGIT BINNS



Brigit Binns is Meathead's culinary consultant, advisor, and confidant. She and Meathead are also collaborating on the hardcover book: *“The Meathead Method, Barbecue Science Meets Art”* for publication in spring 2023. She is the author of **more than two dozen cookbooks**, many

for Williams-Sonoma. Brigit and her husband, the actor **Casey Biggs**, run a B&B (Bed and Bottle), named **Refugio**, in the wine country of Paso Robles, California, where she also teaches private cooking classes. Meathead says “She has taught me much, corrected my stupidities, and the recipes that we have developed together always bowl me over.”

SPECIAL THANKS TO



Elint Cantwell, Senior VP and author of some of our favorite recipes, a few of which are on these pages

David Joachim, Executive Editor of Meathead's AmazingRibs.com

Prof. Greg Blonder, Science Editor of Meathead's AmazingRibs.com

And the rest of the team

ABOUT MEATHEAD'S AMAZINGRIBS.COM



Called “*By far the leading resource for BBQ and grilling information*” by Forbes, [Meathead's AmazingRibs.com](#) is all about the science and art of barbecue, grilling, and all forms of outdoor cooking. With more than 2,000 pages of free information, the site offers countless thoroughly tested recipes, tips on technique, original science research, myth-busting, and unbiased equipment reviews.

The site ranks among the most popular food websites in the US and is one of only a small number of sites in the Library of Congress' [Food and Foodways Web Archive](#). Other sites in the archive include the Food and Agriculture Organization of the United Nations, James Beard Foundation, Southern Foodways Alliance, Jose Andres, US Food & Drug Administration, Oxford Symposium on Food & Cookery, and Seafood Watch. We are in good company!

The site has numerous extraordinary features, among them the world's largest collection of grill and smoker reviews by the world's only full-time grill and smoker tester, the

world's largest collection of thermometer reviews and test results by an electrical engineer, a unique curing calculator, a salt conversion calculator, and it specializes in using science to bust scores of barbecue and grilling myths.

ABOUT THE AMAZINGRIBS.COM PITMASTER
CLUB



The **AmazingRibs.com Pitmaster Club** is the world's largest barbecue association with more than 17,000 paid members who enjoy a lively community forum and more than 20 cool benefits to membership including monthly drawings with prizes worth up to \$2,000. You are invited to take a free 30-day trial membership. No credit card necessary. Click here

<https://AmazingRibs.com/pitmaster>

Here are some of the 20+ benefits to membership:

- You support AmazingRibs.com and help us grow
- We block all third party ads from members
- Free \$9.95 Food Temperature Guide Magnet with 80+ benchmark temps
- Free ebooks
- Free sneak preview of **The Meathead Method**, Meathead's next book in progress
- Free **Barbecue News** magazine every month
- Free **Tailgater** magazine
- Exclusive recipes, recipes, recipes
- 3 monthly giveaways worth up to \$3,000
- Exclusive audio and video content
- Cartoons
- Great discussions and debates with knowledgeable moderators and no race, religion, or politics flamewars allowed
- 3 informative monthly email newsletters
- Meat-Ups
- Discounts on products we love
- Members can buy cool embroidered Pitmaster Club bowling shirts or inexpensive T-shirts
- Membership certificate
- Support for Operation BBQ Relief
- Support for Global Alliance for Clean Cookstoves
- Easy Autorenewal

STAY IN TOUCH



*H*ave a question? Meathead and the site's knowledgeable moderators answer reader questions promptly. Just go to Meathead's AmazingRibs.com and post your question on any page at the bottom where it says "Click for comments..."

If you find an error or a broken link in this book, [please let us know here](#).

And be sure to [subscribe to Smoke Signals](#), our free monthly email newsletter with links to new articles and reviews and more.

PART III
SAFETY FIRST



Fire, knives, pathogens, oh my! People can die from improper cooking. But the risk is very low with a little common sense and an ounce of prevention.

SPOILAGE



There are two types of spoilage: Oxidation and Microbial.

Oxidation is caused by compounds in meat, especially animal fats, combining with oxygen and changing the meat's smell, flavor, and color. Badly oxidized meat is called rancid. The good news is that oxidized meat is usually not dangerous.

Microbial spoilage is the other type of spoilage, and it is very dangerous. There are several commonly occurring *bacteria* and *viruses* in food that can spoil it. Some of these bad guys will merely have you kneeling before the porcelain god, but others can maim or kill you. The goal is to pasteurize the food, i.e. kill as many bugs as possible so that it is safe. That's different than sterilizing which kills every single microbes. We can easily *pasteurize* at home. *Sterilization* is a method that kills or removes all microbes and their spores by using one or more of the following: Heat, irradiation, chemicals, pressure, or filtration.

You can pasteurize most meats by cooking them to 131°F interior temp and holding it for two hours. At 165°F interior, bacteria are killed instantly. [For more on bacterial kill temps, click here and scroll down.](#)

BACTERIA

[The Center for Disease Control \(CDC\) estimates](#) that in one recent year roughly one in six Americans got sick from food, 128,000 were hospitalized, and 3,000 died. *The bad guys are certain types of bacteria, viruses, and parasites.* If you don't want the details, let's make it easy:



Cooking kills the bad guys. Cook food properly and you have nothing to worry about. Raw food is just plain riskier. All raw food and that includes salads.



Bacteria are everywhere. There are more microbes in your body than all other cells combined and they may weigh up to three pounds. **The biggest risks in food come from bacteria you ingest.** Most bacteria are friendly and many, called *probiotics*, are beneficial. Alas, some of them, called *pathogens*, are not so friendly, especially *Bacillus cereus*, *Campylobacter jejuni*, *Clostridium botulinum*, *Listeria monocytogenes*, *Salmonella*, *STEC* (Shiga toxin producing *E-coli*), *Shigella*, *Staphylococcus aureus*, and *Vibrio*. They are hard

to trace because they can often take a day or more to grow in your gut before they knock you down, so figuring out what it was in the fridge or if it was the restaurant lunch is hard to do.

VIRUSES

Viruses are not a major threat in food with one notable exception: *Hepatitis A virus (HAV)* a.k.a. *norovirus* usually comes from human fecal matter, often as a result of poor hand washing.

Coronavirus/COVID-19 is primarily a respiratory virus. It mostly infects the nose, throat, and lungs. Almost all infections come by inhaling droplets of moisture from the breath of other people who have been infected. The risk is greater the more viruses you inhale. The risk can be lowered by limiting your proximity to other people and by using a mask. Normal painter's masks can prevent you from spraying and can reduce the amount of spray you inhale, but they can't stop all the viruses. Masks labeled N95 are much more effective. That's what doctors prefer.

You can get sick by touching something that has the virus on it such as a grocery cart or an apple, and then transferring it to your respiratory system by touching your eye or the inside of your nose or mouth, or by eating food handled by someone who has the virus. The data says the risk of getting sick is low from touching things, especially if you wash your hands often, and keep them out of your eyes, nose, and mouth.

Food is not a likely carrier even if you eat with your hands. If the preparer is sick and washed his or her hands and didn't sneeze or cough on the food, there is likely to be no viruses or at worst a very small load (quantity of bugs). Keep in mind that food goes down one pipe and air down another so if the food is contaminated, it is possible it could get into your lungs because you breathe when you eat, but the risk is considered to be very very low.

PARASITES

Raw food can harbor parasites, most commonly adult tapeworm, tapeworm eggs, tapeworm larvae, and toxoplasma. Tapeworms are most commonly found in seafood. Cooking to 145°F will kill adult tapeworms as well as larvae and eggs. That is hotter than most chefs like to cook fish, even with conventional cooking. Fortunately, most parasites can be killed by freezing for 7 days at -4°F or for 15 hours at -35°F. Commercially frozen fish are often taken to these low temperatures. Alas, most home freezers are set to 0°F. So if you wish to cook fish to 131°F or below, you should consider buying commercially frozen fish.

Toxoplasma is found in shellfish and some mammals as well as contaminated water and cat litter. Fortunately toxoplasma is killed by freezing or cooking.

HOW DO FOODS GET CONTAMINATED?

That's quite a rogues gallery of potential contaminants. If you ingest enough bacteria, they can leave you sitting on the

toilet for hours, plant you on your knees in front of the porcelain god, send you to bed in a sweat and writhing in pain for months, propel you to the emergency room, or even the cemetery. Children and elderly are especially at risk.

It is helpful to think of all raw food as kryptonite. Of course most is perfectly safe, but you never know, and trusting your butcher is no guarantee because most contamination happens long before it hits his loading dock. And although fruits and veggies are not as frequently contaminated, if you pay attention to the news, you will know that recalls of lettuce, spinach, chili peppers, melons, sprouts, and strawberries are frequent because we eat them raw. Contaminated meats are decontaminated when we cook them properly.

The most common source of contamination is animal waste, and that includes human animals. If the bad breeds of E-coli get into water that is used for irrigation, if organic fertilizer is not sterilized properly, if Bambi or Thumper have lunch in a field of lettuce, if a steer's intestines are accidentally sliced open in the slaughterhouse, or if your butcher didn't wash his hands after using the toilet, we have a problem.

If a bluebird bombs a strawberry, if the henhouse isn't cleaned properly by a minimum wage teenager, if the water bath used to remove the feathers from chickens isn't disinfected, we have a problem.

Egg shells may look impervious, but if the hen has salmonella, it can get into the ovum before the shell hardens.

Raw fish sushi is silky and elegant, unless tapeworm eggs from seals, walruses, or whales get into your salmon. They can grow up to 60 feet inside a human.

Raw sprouts might seem like health food, but if Tweety decides to visit the alfalfa seeds or if rodents and insects nibble through the burlap shipping bags in the hold of a ship or warehouse, when we soak and warm the seeds to sprout them, we also water and warm the pathogens. **That makes sprouts the most dangerous food in the super market.**

Improper food handling also makes contamination from your hands, cutting boards, and knives a major problem.

MAKING FOOD SAFE

The most effective way to make food safe is to cook it properly. Raw food, of any kind, is always a risk. In the language of food safety scientists, you need a “kill step” in the process. Lemon juice, vinegar, alcohol, salt, and freezing will not pasteurize food. They may kill a few bad guys and hamper their growth, but they absolutely positively cannot be trusted to make food safe. Sorry, but they just don’t get the job done. Acid and salt might inhibit growth, but they won’t make your food or countertop safe. Remember, when research labs want to store their microbes, they freeze them.

To cook foods properly you must use a digital thermometer. Cooking without it is like driving at night without headlights. AmazingRibs.com has an electrical engineer who tests, reviews, and rates thermometers. His database of more than 200 is a valuable shopping guide. We do not sell any.

The excellent thermometer shown here, the Thermoworks Thermopop reads accurately in 5 seconds and sells for less than \$30. [Click here to order it.](#)



A hot dishwasher and its detergent will make dishes and utensils safe. For countertops, cutting boards, knives, meat grinders, and other things that can't go in the dishwasher, chlorine bleach is your go-to sanitizer. That's why they put it in swimming pools.

You don't want to wash down your carrots with a poison. But chlorine is an excellent disinfectant for cutting boards, countertops, knobs, and handles. Buy an empty spray bottle at the drug store and fill it with a dilute solution of household bleach.



USDA recommends a solution of one tablespoon of 5% unscented, liquid chlorine bleach per gallon of water. After washing with warm soapy water, sanitize with bleach. Wet the surface with the bleach solution and allow it to stand for several minutes. Rinse with clear water and air or pat dry with clean paper towels. Store the solution in the bottle, tightly sealed, and use it often.



STORING RAW MEATS



Can you imagine life without refrigeration? We would eat only what we killed today, or we would all be vegetarians, or we would all be experts on pickling and canning.

But you cannot keep meat in the fridge or freezer forever. Even at standard refrigerator temp, 40°F, 3 to 5 days is the longest you should keep raw meat. Keep in mind, many meats you buy may have already been stored in grocery for several days. So it is best to cook meats soon after you get them home or freeze them. Meat kept in the fridge can still host and grow dangerous microbes, so just because it is chilled doesn't mean it is safe. Cooked meats, if wrapped well, can be kept for up to a week in the fridge before they get risky.

Frozen meats stay good longer. At standard freezer temperature, 0°F, most dangerous microbes cannot grow, so frozen meat can be safe for many months. But remember, freezing does not kill microbes. Oxygen in the packaging can change the flavor and texture of the meat, and the cold can

freeze dry it. When wrapping meat for the freezer, get out as much air as possible wrapping it first with form fitting plastic wrap. If you can, use a vacuum system to suck out the air.

Ground meats have more oxygen mixed in so they start tasting funny sooner than steaks. Pork gets funky faster than lamb which gets funky faster than chicken or turkey, and beef is the last to go.

In general, the bigger the hunk of meat, the longer it will keep. Here's a rough guide that can vary depending on how well you have wrapped the meat:

- **Ground pork and sausage:** 2 months
- **Ground beef or lamb:** 4 months
- **Pork chops:** 4 months
- **Pork roasts:** 5 months
- **Lamb chops:** 5 months
- **Steaks:** 6 months
- **Beef roasts:** 8 months

Why is meat in my fridge turning brown?

At first, oxygen reacts with pigments to turn meat red. After a while, the meat starts to oxidize, which turns it brown, the same way an apple or potato turn brown.

Why does my meat shine like a rainbow?

It is simply a fluke of lighting that strikes the surface just the right way when the surface has been cut on a certain angle. Strictly refraction, not bacteria or an oil slick.

Why is my meat green?

Bad bacteria. Throw it out.

Why are there are dry white spots on my meat from the freezer?

That's freezer burn. It's like frostbite. The meat has probably been in the freezer too long and/or it was not wrapped tight. It is still safe, but the burned parts will probably be dry and bland. Trim it off and cook it, but don't serve it to Mom or the boss.

My meat smells funny, what should I do?

Sometimes meat will smell a bit odd when you take it out of a vacuum sealed plastic bag, but the smell should dissipate within a few minutes. If it still smells funny, then chances are it is funny. Throw it out. Remember: when in doubt, throw it out!

What are those boogers coming out of my burgers and my salmon?





According to the AmazingRibs.com meat scientist, [Dr. Antonio Mata](#), hamburger exudates (I call them boogers) are proteins dissolved in water, mostly myoglobin. When burgers are ground, plump muscle fibers are sheared open. As the meat begins to heat, protein and collagen shrink and squeeze out the proteinaceous fluids, which are pink at first, and then they gel and turn tan just like the meat.

In salmon, boogers consist of another group of proteins dissolved in water called *albumin*. The albumin is pushed to the surface by shrinkage caused by heat. Brining helps minimize it, but not always. Salmon boogers can usually be wiped off with a paper towel or a brush. Another good technique is to paint the surface with a simple wash of sweet wine, mirin, or a glaze.

WASHING FOOD AND CUTTING BOARDS



*R*insing meat can remove slimy fluids on the surface, but these are really nothing much to worry about. To be sure there are bacteria in them, but they will be killed instantly when heated. Rinsing is helpful to remove bone chips that might be on the surface from the butchering process because many cuts through bone are made with band saws.

Unfortunately, rinsing meat in the sink cannot remove bacteria which are embedded in the pores and cracks in the muscle surfaces. In fact, rinsing can make things worse by splattering microscopic contaminated droplets onto the sink and counters.

Jennifer Quinlan a food safety scientist at Drexel University in Philadelphia did some famous research in which she showed that rinsing meat aerosolizes tiny droplets of juices laden with bacteria all over the sink, faucet, surrounding counters, dish drains, and yourself.

Although she doesn't discuss it, the problem also arises in washing your cutting board.

She recommends you do not wash meats. But we know you want to. The solution is to turn down the water pressure and be careful not to splash. Or submerge the meat or cutting board in water.

HAZARDOUS FOODS



FOOD ALLERGIES

The Food Allergen Labeling and Consumer Protection Act requires that food packaging must declare prominently if it contains any of the eight most common food allergens: Milk, eggs, peanuts, tree nuts, fish, shellfish, soy, and wheat.

A good host will always ask guests in advance if they have any food allergies and either plan a menu that omits them, or plan a special dish for the guest with the allergy. Of course it is also the guest's obligation to inform the host so when dinner is served the host doesn't feel bad that the guest pushes away the plate.

The whole thing gets a bit complicated when people who don't have an allergy or celiac disease, but they have decided to avoid gluten or another food that they think is bad for them.

Common sense, courtesy, tolerance, and communications need to be the watchwords.



OTHER HAZARDOUS FOODS

So a food safety expert from the FDA was giving a seminar on food safety at a culinary school. Near the end of the talk she touched on the fact that some foods have effects that are cumulative and the hazard might not be evident for decades. She asked the audience if they could think of an example. After a few moments of silence an old codger in the front row raised his hand and mumbled “wedding cake.”

IS PINK MEAT SAFE?



*Y*es, pink meat can be safe.

First of all, some turkey meat is naturally pink. According to the USDA, “The color of cooked meat and poultry is not always a sure sign of its degree of doneness. Only by using a food thermometer can one accurately determine that a meat has reached a safe temperature. Turkey, fresh pork, ground beef, or veal can remain pink

even after cooking to temperatures of 160°F and higher. The meat of smoked turkey is always pink.”

In addition, smoked meat turns pink due to a chemical reaction with the combustion gases and the smoke and the meat.

Click here for more on [ideal meat temps](#). Click here for more on [meat science and the thermodynamics of cooking](#) and info on how to order this awesome temperature guide magnet with more than 82 benchmark temperatures (or join our [Pitmaster Club](#) and get it for free).

Meatheads.com AMAZINGRIBS.COM FOOD TEMPERATURE GUIDE
 "By far the leading resource for BBQ and grilling information" Forbes

Beef, Lamb, Venison, Duck Breasts (Steaks, Chops, Roasts) - USDA Minimum 145°F (63°C)

Rare	110-120°F (43-49°C)	Dark purple, cool, satiny, slippery, slightly juicy
Medium Rare	120-130°F (49-54°C)	Bright red, warm, tender, juicy
Medium	130-135°F (54-57°C)	Bright red, warm, tender, very juicy
Medium Well	135-145°F (57-62°C)	Deep pink, yielding, juicy
Well Done	145-155°F (63-68°C)	Slight pink, some fat, firm, slightly fibrous, moist
Well Done	155°F (68°C) or more	Tan to brown, no pink, chewy, dry

Pork, Raw Ham, Veal (Steaks, Chops, Roasts) - USDA Minimum 145°F (63°C)

Rare	120-130°F (49-54°C)	Pale pink center, warm, tender, slightly juicy
Medium Rare	130-135°F (54-57°C)	Creamy pink color, bouncy, very juicy
Medium	135-145°F (57-62°C)	Cream color, some pink, yielding, juicy
Medium Well	145-155°F (63-68°C)	Cream color, firm, slightly juicy
Well Done	155°F (68°C) or more	Cream color, tough, dry

Chicken, Turkey (Whole Or Ground), Including Stuffing - USDA Minimum 165°F (74°C)

SV TEMP Medium Well	150-155°F (60-68°C)	Cream color white meat, pale tan dark meat, tender
CHEF TEMP Well Done	162°F (71°C)	Cream color white meat, pale tan dark meat, firm

Ground Meats & Raw Sausages - USDA Minimum 160°F (71°C)

SV TEMP Medium	145°F (63°C)	
Grill or pan fry these risky meats to	160°F (71°C) and make them juicy by using a 20 to 30% fat blend	

Turns - USDA Minimum 145°F (63°C)

CHEF TEMP Rare	120-125°F (49-52°C)	Bright reddish purple
Other Fin Fish - USDA Minimum 145°F (63°C)		
CHEF TEMP Medium Rare	125-135°F (52-57°C)	Slightly translucent, flaky, tender

Lobster, Crabs, Crawfish, Shrimp, Scallops - USDA/CHEF/SV TEMP when opaque 131°F (55°C)

CHEF & SV TEMP Warm	140°F (60°C) or more	Tender juicy
---------------------	----------------------	--------------

BBQ/Smoked Ribs, Shoulders, Briskets, Legs, Ramps - USDA Minimum 145°F (63°C)

CHEF TEMP Smoke Ribs Apart	205°F (96°C)	100% fat and collagen, best cooked low and slow
----------------------------	--------------	---

Clams, Oysters, Mussels - USDA/CHEF/SV TEMP when shells open

Leftovers - USDA/CHEF/SV TEMP Minimum 165°F (74°C)		
--	--	--

Other Useful Temperatures

87° (-13°C)	Low freezer temperature.
25° (-4°C)	Meat freezes.
32° (0°C)	Water freezes.
34-39° (1-4°C)	Best refrigerator temperature.
41-130°F (5-64°C)	Danger zone in which many pathogenic bacteria grow.
120-125°F (54-57°C)	Medium rare, most meats are moist tender and juicy.
121°F (50°C)	Most pathogenic bacteria begin to die. Minimum safe side temp.
130°F (57°C)	Consecutive hours begin to cook and appear not pink joints.
150-160°F (66-74°C)	Large cuts at low temps stall and do not rise for hours.
160°F (71°C)	Soft boiled eggs.
160-165°F (71-74°C)	Lowest kill zone. Most pathogens die in seconds.
160-200°F (71-93°C)	Collagen melt, form gelatin, making meat succulent.
170-180°F (77-82°C)	Collagen begins to set.
175°F (79°C)	Alcohol begins to boil.
180-185°F (82-85°C)	White begins to simmer.
180°F (82°C)	Catsup begins to thicken.
180-200°F (82-93°C)	Meat broths are done baking.
210°F (100°C)	Boiled potatoes are fully.
212°F (100°C)	Sea level boiling point. Subboil 2°F every 1000' above.
225°F (107°C)	Best temp for low & slow cooking tough cuts of meat - I.
300°F (154°C)	Optimal browning temperature.
325°F (163°C)	Minimum cooking temp for brooding poultry skin.
425°F (208°C)	Follow pans can emit toxic gases.
400°F (205°C)	Follow pans can emit toxic gases.
500-565°F (260-290°C)	Hardwoods start to smoke.
700-1000°F (390-538°C)	Hardwood gives produce flame.

Fat & Oils

26-120°F (30-64°C)	Animal fats start to soften and melt.
300°F (149°C)	Butter starts to smoke.
325-375°F (163-191°C)	Extra virgin olive oil begins to smoke.
350-375°F (177-191°C)	Best oil temp for most deep frying.
381°F (197°C)	Some animal fats begin to smoke.
370°F (188°C)	Lard begins to smoke.
375-400°F (190-205°C)	Virgin avocado oil begins to smoke.
390°F (199°C)	Grapeseed oil begins to smoke.
400-450°F (205-230°C)	Vegetable oil begins to smoke.
440°F (222°C)	Impervious olive oil and sunflower oil begins to smoke.
450°F (232°C)	Flaxseed oil, corn oil, soybean oil begins to smoke.
482°F (250°C)	Canola begins to smoke.
610°F (320°C)	Safflower oil begins to smoke.

Sugar

217-222°F (103-106°C)	Best temp for most jams and jellies.
230-234°F (110-112°C)	Themed Stage. Sugar begins rapid melt.
235-242°F (113-118°C)	Soft Ball Stage. For hard candies.
244-260°F (118-127°C)	Soft Ball Stage. For hard candies.
290-295°F (150-142°C)	Hard Ball Stage. For caramels.
300-310°F (149-155°C)	Soft Crack Stage. For wafers.
320-350°F (160-177°C)	Hard Crack Stage. For brittle, lollipops.
350°F (177°C)	Best Sugar Stage. Start to burn and turns bitter.

Sous Vide (SV) RULES OF THUMB
 These times and temps are starting points that will produce meats that please. Experiment!

A - TENDER CUTS
 1 - Cook, Salt, then sear vide for 2-4 hours at the temp or left.
 2 - Optional. Chill thoroughly in the bag.
 3 - Rub. Remove from bag, pat dry, sprinkle generously with salt-free rub or lightly with solted rub.
 4 - Finish. Sear in a hot pan, griddle, or on a grill until you like it, or smoke at 225°F (107°C) and then sear. Bring to the temp or left. Glaze or sauce if you wish.

B - TOUGH CUTS
 1 - Cook. Salt, then sear vide at 145°F (63°C) for about 24 hours.
 2 - Optional. Chill thoroughly in the bag.
 3 - Rub. Remove from bag, leave wet, sprinkle generously with salt-free rub or lightly with solted rub.
 4 - Rest or smoke. Rest or smoke at 225°F (107°C) until 145-155°F (63-68°C).
 5 - Optional. Thoroughly dry the surface. Sear in a hot pan, griddle or on a grill. Glaze or sauce if you wish.

For ratings and reviews of more than 150 accessories, ingredients, digital thermometers and BBQ electronics visit: [AmazingRibs.com/thermometers](#)

Much more info on Meatheads' AmazingRibs.com Version 5.8 Copyright © 2020

WHAT ABOUT RED OR PINK JUICES?



Because of the speed with which commercial turkey farms grow their birds, it is not uncommon for there to be red or pink juices in the thigh joints even if the meat is properly cooked. That's because the birds are young and the joint bones have not had a chance to properly harden. If a little red makes you nervous, even if your thermometer is at 165°F, after carving, a minute or two in the microwave should take care of it. **[For a real eye-opener on why poultry is not done when the juices run clear, click here.](#)**

KNIFE SAFETY



Be alert and focused when using knives and sharp objects. Beverage alcohol and knives is a dangerous combo.

- Use sharp knives.
- Do not gesture and waive with knives in your hands.
- Always use a cutting board. Never cut anything in your hand.
- A damp towel or paper towel under a cutting board can help keep it from shifting.
- Make sure you have plenty of elbow room when cutting.
- If you drop a knife, get your feet out of the way and don't try to catch it! Wait for the knife to stop moving before trying to pick it up.
- Never open cans with a knife. I don't care what you saw on Iron Chef.
- Never use a knife as a screwdriver.

GRILL, SMOKER, OVEN, AND STOVETOP SAFETY



Grills, smokers, sideburners, and indoor ovens and stovetops can do massive damage to property and life if not treated with respect

- Never cook with grills or smokers indoors or in garages. They produce invisible carbon monoxide and smoke that can kill you.
- Don't keep your grill next to a furnace air inlet or even a window. The house is often under a negative pressure, and can suck in these killing gases.
- Don't keep your grill close to your house or deck railings. Beware of overhanging roof lines or trees.
- Never use gas, paint thinner, solvents, or kerosene to start your charcoal. **Chimneys or electric coil starters are the best way to start coals**, but if you use charcoal starter fluid, once the coals are smoldering never squirt them with more fluid. The flame can climb up the stream and set you on fire.
- Don't cook near gasoline or other flammables. Keep propane tanks at least two feet from the burners

unless there is shielding.

- On gas grills, always lift the lid when you ignite the burners. If you have one burner lit and want to add others, it is safe, just open the lid. A gas buildup under the hood could blow it open and flash in your face.
- On kamados and eggs, the lid seal is very tight so when you open it, air rushes in and it can flash flame in your face. Stand back and open the lid slowly.
- Store propane cylinders outdoors in an upright position.
- If you smell gas, turn off the grill immediately. On New Year's Day 2013 ESPN host Hannah Storm returned to the air with a bandaged hand, a wig, false eyelashes and eyebrows. She was injured when trying to ignite her propane grill after the wind blew the flame out. Unbeknownst to her, the gas continued to course through the jets and pooled in the lower chamber because it is heavier than air.
- Handle hot grills, coals, and hot liquids with respect. Be alert. No horseplay near cookers.
- Keep children and pets away from grills and smokers, uncooked meat, hot liquids, and sharp objects.
- Use potholders and/or insulated gloves.
- Do not discard ash until the coals are thoroughly dead. Let them sit overnight or dump water on them before you put them in your trash can.
- Bare feet, sandals, flip-flops, and loose clothes are dangerous around grills.

- Don't put small grills on flammable surfaces or glass tables.
- Before you use a new grill or smoker, fire it up on high and let it run for about 30 minutes to burn off any oil or grease or packing materials from the manufacturing process or from shipping. Click here to read more about [Seasoning and Calibrating a New Grill or Smoker.](#)
- Save the grill manual and remember where you put it.
- If you have long hair, tie it in a pony tail. And grilling is yet another great excuse to not wear a tie.
- If you pour water over hot coals, it will produce enough steam to melt your nose, and enough hot water will come out of the bottom to melt your toes.
- Heat the grates to high before cooking and carbonize grease and scraps from your last cook. Then scrub them off (read [more about grate cleaning](#)). If you use a wire brush, beware that bristles can come out and people have died from wire bristles that lodge in their digestive system. Before the food goes on, use a damp cloth and tongs to wipe off the grates and visually inspect them.
- Make sure handles of pots and pans are not sticking out over the edge of a table or counter where people walking by can bump them.
- Do not fill pots to the brim. Liquids expand when they are heated.
- If you put a wet liquid into hot oil it will spit hot oil at high velocity right at your eyes with deadly accuracy.
- Keep pets away from the front of the stove.

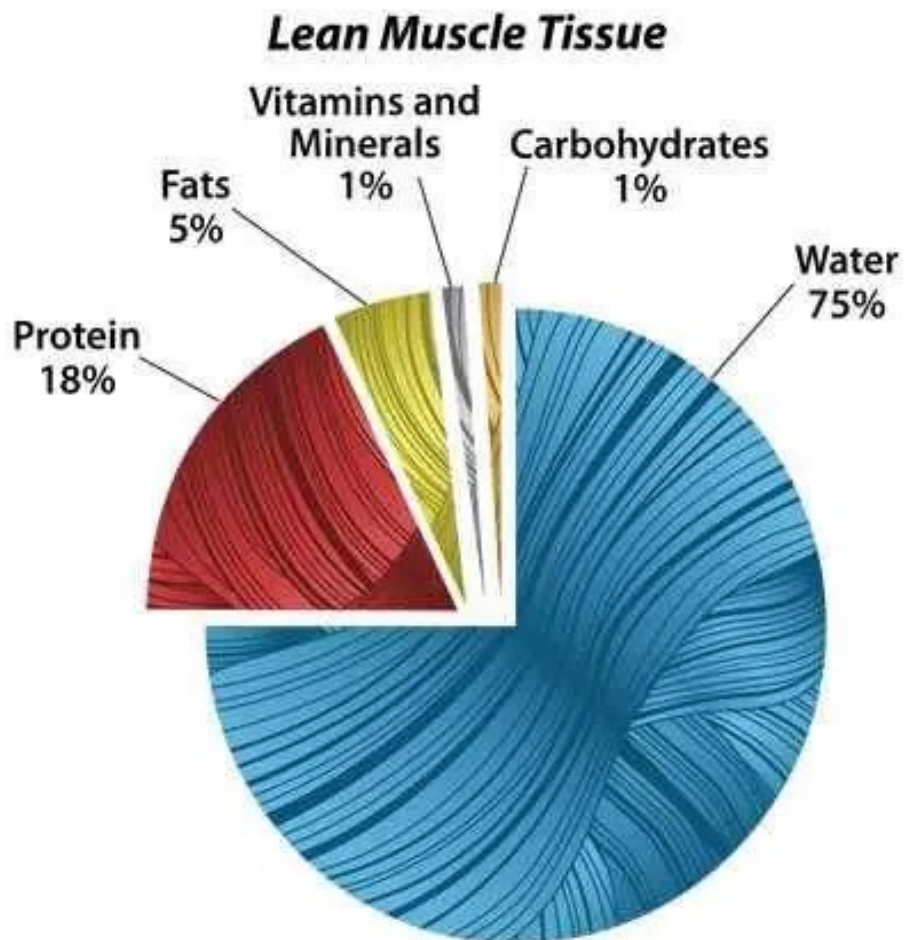
PART IV SCIENCE



Whenever you set foot in the kitchen or sidle up to the grill or smoker, you commence a chemistry and physics experiment. Food is a complex chemical compound and when you apply energy in the form of heat you are using physics to alter its chemistry. As scientific as these processes are, they are also magical!

We could just feed you a bunch of recipes and techniques, but if you understand the chemistry and physics, well, you really don't need any recipes!

MEAT SCIENCE



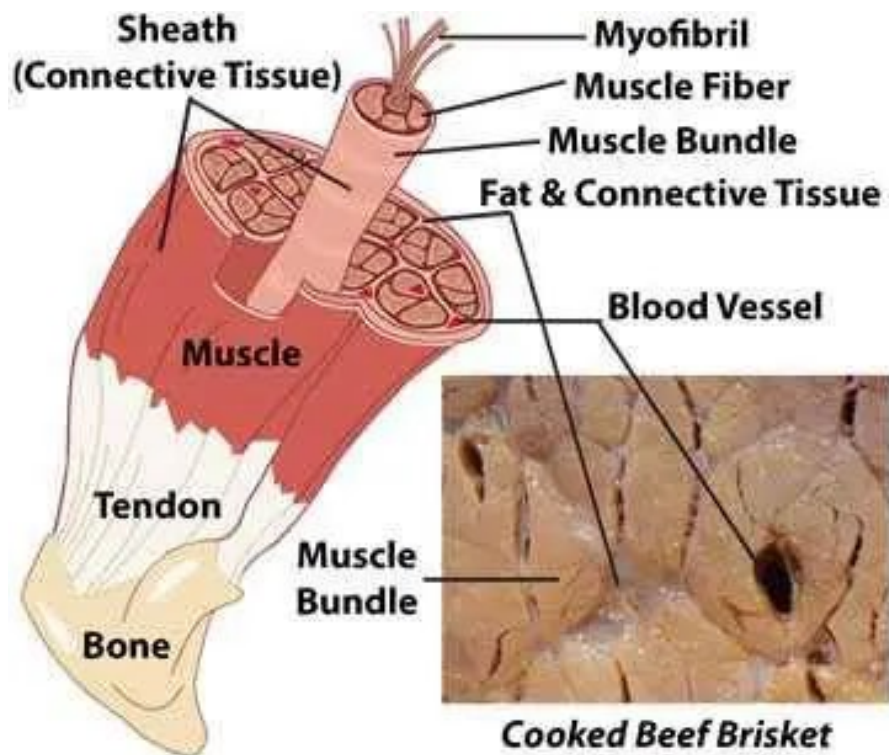
*M*eat is cut from the muscles of mammals and birds. For some reason, fish muscle is not

considered meat by some people, but it should be. It is fish muscle tissue.

On average, lean muscle tissue of mammals typically breaks down like this: Water (about 75%), protein (18%), fats (5%), carbohydrates, salt, vitamins, sugars, and minerals (2%).

MUSCLE CELLS

Muscle cells are more frequently called *muscle fibers* because they are shaped like tubes. Muscle fibers bundled together are called *sheaths*, and sheaths bundled together are called *muscle* or *meat*.



The fibers, about the thickness of a human hair, contain several types of protein, among them *myosin* and *actin* which

bind up water and act like living motors by contracting and relaxing on command by nerves. As an animal ages, grows, and exercises, its muscle fibers get thicker and tougher.



Myoglobin is another important protein in muscle fibers. *Myoglobin* receives oxygen and iron from *hemoglobin* in blood, fuel necessary for muscles to function. *Myosin* and *actin* are not water soluble, but *myoglobin* is water soluble, and *myoglobin* is the protein in meat that makes it appear red.

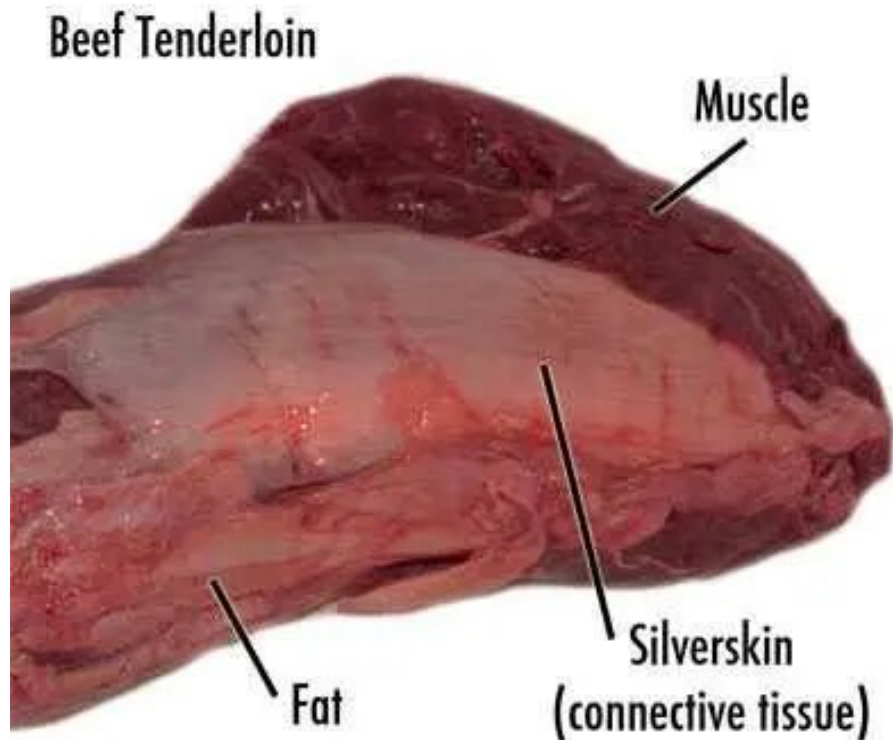
That's right, the reddish color in meat and its juices *is not caused by blood*. It is *myoglobin* dissolved in water, called *myowater*. *Myoglobin* is found only in muscle, not in the blood stream. The blood is pretty much all drained out in the slaughter house. If the stuff on your plate when you sliced a

steak was blood, it would be much darker, like human blood, and it would coagulate, like human blood. If the fluids were blood, then pork and chicken would be dark red. It's mostly just water, so let's stop grossing out our kids, and just call it juice. OK? **Every time you call meat juices blood, a bell rings and a teenager becomes a vegan.**

On average, beef has 8 milligrams of myoglobin per gram of meat, **according to the meat scientists at Texas A&M University's Department of Animal Science**, making it one of the darkest red meats. Lamb has about 6 milligrams per gram, pork about 2 mg/g, and chicken breast about 0.5 mg/g. If pork is the other white meat, lamb is the other red meat. When warmed, meat juices containing myoglobin lose their red color, become lighter pink, and eventually tan or gray.

Most of the liquid in meat is water. When animals are alive, the pH of the muscle fibers is about 6.8 on a scale of 14. The lower the number, the higher the acidity. The higher the number, the more alkalinity and less acidic. At 6.8, living muscle is just about neutral. When the animal dies, the pH declines to about 5.5, making it acidic. At this pH, muscle fibers form bunches and squeeze out juice, called purge, and that is the juice you see in packages of meat that is absorbed by the diapers that butchers put under the meat.

Muscle fibers also contain other proteins, notably, enzymes. **Enzymes play an important role in aging meat.**



CONNECTIVE TISSUE

Connective tissue is most obvious in the form of tendons that connect muscles to bones and in ligaments that connect bones to other bones. It is also visible as the thin shiny sheathing that wraps around muscles called silverskin or fascia. These tougher, chewier, rubberband-like connective tissues are mostly *collagen* and *elastin* (as opposed to the muscle, which is mostly *myosin*.) We call them gristle and they shrink when heated and become hard to chew. As with muscle fibers, connective tissues thicken and toughen as an animal exercises and ages.

A softer connective tissue called *collagen* is scattered throughout the muscle, often surrounding fibers and sheaths

holding them together. And yes, this is pretty much the same stuff the Hollywood wives have injected into their faces to get rid of wrinkles.

When you cook, collagen melts and turns to a rich liquid called *gelatin*, similar to the stuff Jell-O is made from. Cooked muscle fibers, no longer bound together by collagen, are now uniformly coated with a soft, gelatinous lubricant. This smooth and sensual substance enrobes meat in a wonderfully silken texture and adds moisture.

Lean meats such as beef or pork tenderloin, as well as most chicken and turkey, don't have much collagen. When cooking tough cuts of meat with lots of connective tissue, like ribs, brisket, and shoulder, it is important to liquefy the meat's connective tissue into gelatin: that's what makes these tough meats taste tender. This takes time. That's why these cuts are often cooked low and slow.

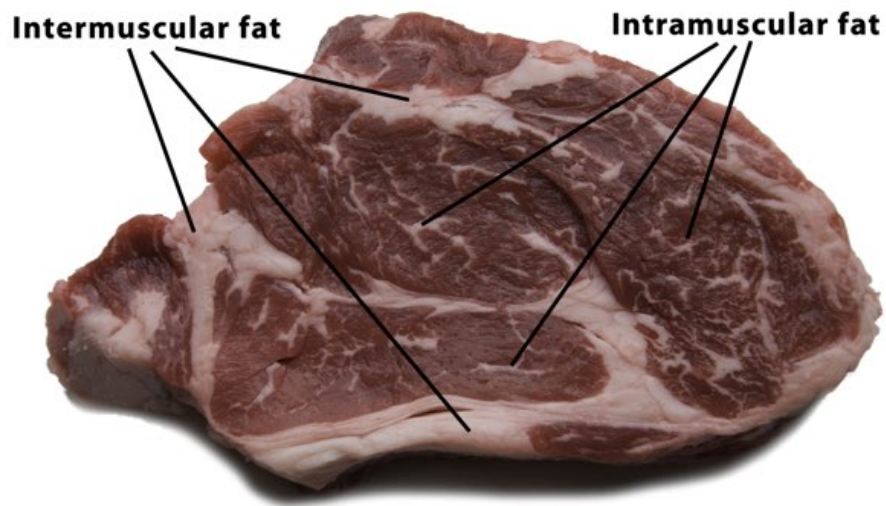
Muscle fibers start seizing up around 125°F to 140°F if heated quickly. But when heated slowly, the rubber band-like connective tissues have time to relax and do not squeeze tightly. In general, we believe it is best to cook all meats at about 225°F. Slow roasting does wonders for meat. The AmazingRibs.com science advisor **Prof. Greg Blonder** says "Think of silly putty. Pressed hard and quickly, it acts like a rigid solid. Pressed slowly, it flows." When heated slowly, the muscle fibers, instead of wringing out moisture, relax and simply let water linger inside until evaporation drives it out.

After it melts, as it chills, gelatin can solidify into that jiggly stuff which, with a little filtering, can then be called aspic and served at bridge clubs. Here's a pot of the stuff made simply by boiling a couple of chicken carcasses in water after I ate the meat, discarded the bones, and chilled the liquid. The white is fat, most of which I have removed, and the tan is jiggly gelatin.



FATS

Fats (*lipids*) and oxygen are the main fuels that power muscles. Fats are packed with calories, which are potential energy released when the chemical bonds are broken. From a culinary standpoint, fat comes in three types:



- **Subcutaneous** fats are the thick hard layers beneath the skin.
- **Intermuscular** fats are layers between muscle groups.
- **Intramuscular** fats woven amongst the muscle fibers and sheaths improve meat's moisture, texture, and flavor when cooked. These threads of intramuscular fat are called marbling because they have a striated look similar to marble.

Large fat deposits can also be found around organs, especially kidneys. On hogs, the best fat of this type, at least from a culinary standpoint, especially if you make pie crusts, is called leaf lard, and it comes from around the kidneys.

Fats are crucial to meat texture. Waxy when cold, fats start to melt around 130°F to 140°F, lubricating muscle fibers just as they are getting tougher and drier from the heat. Fat does not evaporate like water when you are cooking.

Fat also provides much of the flavor in meat. It absorbs and stores many of the aromatic compounds in the animal's food. As the animal ages, those flavor compounds build up and get more noticeable. After the animal is slaughtered, the fat can turn rancid if stored too warm, too long, or in contact with oxygen. So we have a tradeoff. The muscle fibers and connective tissues get tougher as the animal ages and exercises, while the fat accumulates and builds flavor.

Fats, especially animal fats, are the subject of great debate among scientists, doctors, dietitians, and health faddists. For many years, animal fats were thought to be dangerous and avoided. It is now thought that fats, even animal fats, contain many beneficial components, and current science argues that, in moderation, they are essential for health. A great deal of interesting research on the subject is going on as we write this. A great deal of research is contradictory.

[Read more about what we have learned about food and health in this article.](#)

SLOW TWITCH VS. FAST TWITCH MUSCLES

Muscle fibers need fat and oxygen for fuel. Fat comes from fatty acids in the animal's blood that were created by digestion of its food. Oxygen is carried by the protein *hemoglobin* in the bloodstream, and it hands the oxygen to myoglobin within the muscles.

In general, the more exercise a muscle gets, the tougher it is, and the more oxygen-laden myoglobin it needs. Myoglobin turns meat darker and makes it more flavorful. Dark meats,

like beef, lamb, duck, and goose, are made of “slow twitch” muscles that have evolved to endure slow, steady movement, and they are loaded with juicy myoglobin. Dark meats also have more fat for energy.

White meats, like chicken breasts, are mostly “fast twitch” muscles, which are better suited to brief bursts of energy, and they have less myoglobin. Chicken legs are slow twitch, and even though they are not red, they are darker than breasts. When cooked, the slow twitch muscles in dark meat have more moisture and fat and are more flavorful than white meat. White meats contains less moisture and fat, and they dry out more easily when cooked. Poultry gets more exercise standing and walking than flying, so the legs and thighs have lots of slow-twitch muscles, more pigment, more juice, more fat, and more flavor. They are also slightly more forgiving when cooked. Modern chickens and turkeys have been bred for large breasts because white meat is more popular in this country (and we can't understand why). We'll take tough and flavorful over tender and mild any day.

Ducks and geese excel at flying and swimming, and they get more exercise than chickens and turkeys, so these birds have more dark meat. Duck and goose breasts are deep purple, almost the same color as lamb or beef.

When the conventional wisdom was that dietary fat could cause heart and arterial problems, domestic pigs were bred to have less intramuscular fat. The modern pig does not get much exercise due to its transmogrification into “the other white meat.” In recent years, research has questioned the

relationship between dietary fat and health, and many experts now extol fat's benefits.

Beef is all pretty much the same color, but slow twitch muscles like flank steak have bigger, richer flavor than some of the lesser used muscles like tenderloin.

Fish live in a practically weightless environment, so their muscles are very different. Fish muscles have very little connective tissue, and that's one reason why fish never gets as tough as pork when cooked. But fish can dry out because there is not much collagen to moisturize the muscle fibers. The color and texture of fish varies depending on the life it leads. Small fish that swim with quick darting motions have mostly fast-twitch muscles and white meat, while flounder, which lives on the sea floor, has delicate flaky flesh. Torpedos like tuna and swordfish swim long distances with slow steady tail movements, so they have firmer, darker, sometimes even red flesh. For these reasons and others, fish can spoil within days of being caught, while red meats keep much longer.

BROWN IS BEAUTIFUL, BLACK IS BAD

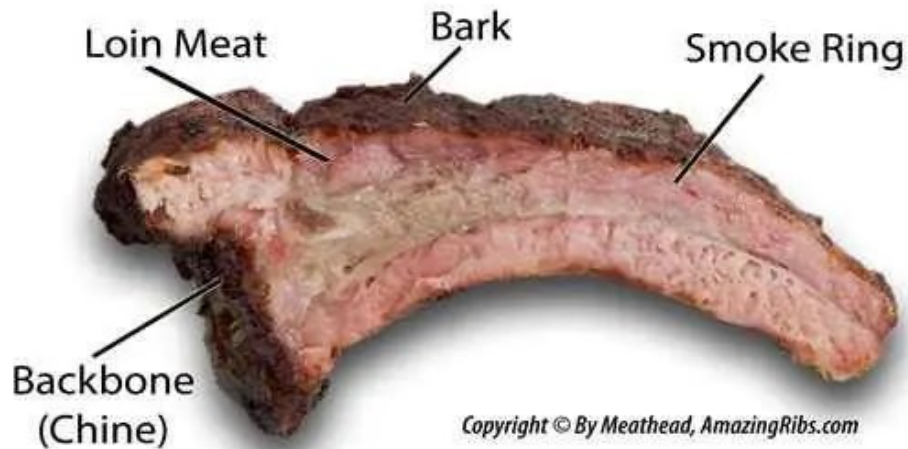


As meat cooks, the most magical transformation that occurs is the *Maillard reaction*. It is named for a French scientist who discovered the phenomenon in the early 1900s. The surface turns brown and crunchy and gets ambrosial in aroma. Who doesn't love the crispy exterior of a slice of roast beef, the browned crust on freshly baked bread? We don't think twice about it, but that brown color on the surface is the mark of hundreds of compounds created when heat starts changing the shape and chemical structure of the amino acids, carbohydrates, and sugars on the surface of the meat. If there is sugar in the rub or marinade it can undergo a flavorful transformation called *caramelization*. Click here to learn more about the [**Maillard reaction and caramelization**](#).

What you don't want is black meat. Let it go too far and it turns to carbon. [**Carbonized meat may be unhealthy**](#).

PRETTY IN PINK

Anatomy of a Baby Back



There's another color you may notice in cooked meat: Pink. Many smoked meats turn bright pink just under the surface. Some people think that pink color means that meat is raw, but not in this case. If the meat were undercooked, the pink would be in the center, not just below the surface. Pink meat near the surface is a common phenomenon called the *smoke ring* and it is caused by gases in smoke preserving the color of myoglobin. Some people think the smoke ring improves taste. That's a myth too. [Click here to read more about the smoke ring and what causes it.](#)

WHAT HAPPENS WHEN YOU COOK?

Hot air cooks the surface of meat, but it cannot penetrate, so the energy built up on the outside of the meat moves slowly towards the center, eventually cooking the meat throughout. As the internal temp of your meat rises, its color is not the only thing that changes. A number of chemical and physical reactions take place, as the molecular structure of proteins

and fats are altered by heat. Different reactions kick in at different temperatures.

Here's a general guide to temperatures organized from cold to hot. The meat temps shown here are approximate because other variables come into play such as the age of the animal, acidity, salt content, type of heat, humidity, etc. This info has been gathered from multiple sources, including meat science research papers, textbooks, and **Harold McGee's important book, On Food And Cooking**. Click here for a **complete guide to target cooking temperatures**.

25°F (-4°C). Meat freezes. Meat starts to freeze at a lower temperature than water because water in meat is combined with proteins. Water expands as it freezes and sharp-edged crystals form that can rupture cell walls, creating “purge” when the meat is thawed, which is a spilling of liquid, mostly the pink fluid protein called myoglobin. Faster freezing makes smaller crystals, resulting in less purge.

34-39°F (1-4°C). Ideal refrigerator temperature. Water is not frozen, and microbial growth is minimized. You do have **a good refrigerator thermometer don't you?**

41-135°F (5-57°C). The “USDA Danger Zone,” in which many pathogenic bacteria grow, sometimes doubling in number in as little as 20 minutes. According to the USDA, cold foods must be stored below 41°F (5°C), and hot foods above 135°F (57°C). **That's why we don't leave meats sitting around to come to room temp.**

60°F (15°C). When chilling cooked meat, liquid gelatin forms a solid gel called aspic. Gelatin happens when connective

tissues that wrap muscle fibers and connect them to bones, called collagen, melt. Yep, it's the same stuff they inject under your skin to hide wrinkles.

95-130°F (35-54°C). Animal fats start to soften and melt.

114°F (46°C). Myofibrillar proteins begin to gel, changing meat texture.

120°F (49°C). Myosin, a protein involved in muscle contraction within fibers, begins to lose its natural structure. It unwinds or unfolds, a process called denaturing. It starts to clump, gets milky, and begins firming up the muscle fibers. Purple meats, called "rare," start turning red. Fish begins to flake, and parasites begin to die.

130°F (54°C). Many pathogenic bacteria begin to die, slowly at first, but as the temp rises, they croak more rapidly. At this temp, it takes more than two hours to pasteurize meat. At 165°F (74°C), it takes just seconds.

130-135°F (54-57°C). Medium rare. Most mammal meats are at optimum tenderness, flavor, juiciness. If you eat your meat well-done, you need to snap out of it.

130-140°F (54-60°C). Fats begin to liquefy, a process called rendering. This is a slow process and can take hours if meat is held at this temp.

140°F (60°C). Connective tissues called collagens begin to contract and squeeze out pink juice from within muscle fibers into the spaces between the fibers and out to the surface. Meat begins to get dry. Myoglobin, the pink protein liquid within muscle cells, denatures rapidly and red or pink

juices begin to turn clear or tan and bead up on the surface. It is not blood!

150°F (66°C). Actin, another protein important to muscle contraction in live animals, begins to denature, making meat tougher and drier still.

150-165°F (66-74°C). This is “**the stall zone**,” in which large cuts such as pork butt and beef brisket seem to get stuck for hours when cooked at low temperatures like 225°F (107°C). In this range, moisture evaporates and cools the meat like sweat on an athlete. Inexperienced cooks panic. Eventually, temps start rising again. Whew!

155°F (68°C). Known as “well done,” meats are overcooked at this internal temperature. Much moisture has been squeezed out, and fibers have become tough. Bacteria are killed in less than 30 seconds, but spores can survive to much higher temps.

160-165°F (71-74°C). The “instant kill zone.” Normal cooking temps kill microbes on the outside of meats rapidly, so solid muscle meats are not likely dangerous since contamination is almost always on the surface. But ground meats and poultry often have bad guys beyond the surface, so you must cook these meats beyond the instant kill zone. That’s why the recommended internal temp for ground meats is 160°F (71°C) and for poultry is 165°F (74°C). When you reheat foods, you should take them up to 165°F (75°C).

160-205°F (71-96°C). Tough collagens melt and form luscious gelatin. The process can take hours, so low and slow cooking creates the most gelatin. Dehydrated muscle fibers

begin to fall apart and release from the bones. Meat becomes easy to shred. Even though the fibers have lost a lot of water, melted collagen and fat make the meat succulent.

212°F (100°C). Water boils at sea level. Boiling point declines about 2°F for every 1000' above sea level.

225°F (107°C). Ideal air temperature for “low & slow” cooking of meats high in connective tissue. It is high enough so water evaporates from the surface to help form the desired crust called “**bark**,” but low enough to get the most out of enzymes, collagen melting, and fat rendering.

310°F (154°C). The **Maillard reaction** accelerates surface browning, which is caused by chemical changes in proteins and sugars and results in thousands of delicious new molecules. The Maillard reaction begins at lower temps, but really takes off at 310°F (154°C).

325°F (163°C). Ideal air temperature for cooking chicken and turkey so skin browns and fat renders.

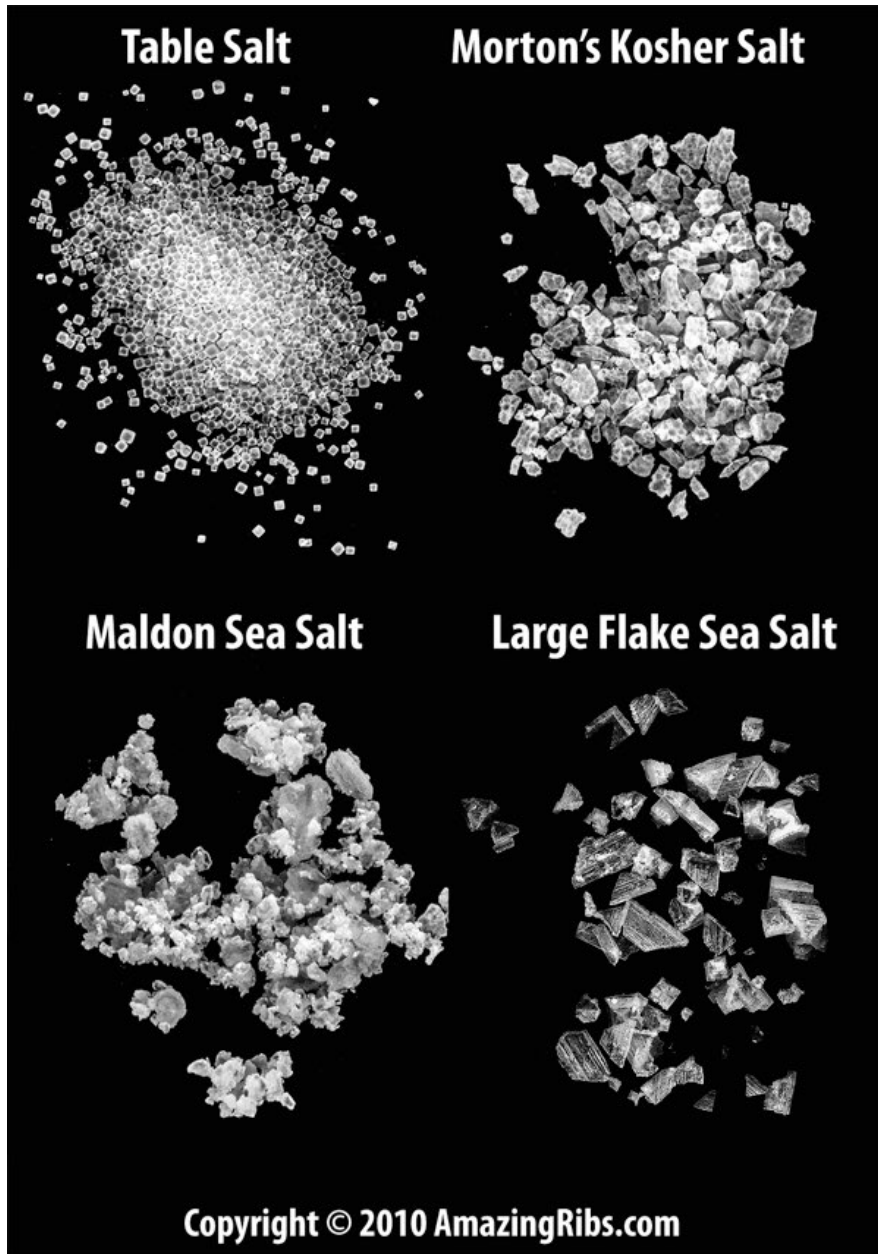
361°F (183°C). Some animal fats begins to smoke.

570-750°F (299-399°C). Primary combustion temperature of hardwood, wherein it smolders and releases large quantities of unburned gases, including microscopic particles called smoke.

600-700°F (316-371°C). Flash point or fire point, the temperature at which smoke from burning fat can burst into flame. Never use water to extinguish burning fat. Smothering it works better.

SALT: THE MAGIC ROCK!





“One thing I like about Argentina, they only cook with salt. That's it.”

— ROBERT DUVALL

*I*f you like your meat juicy, tender, and flavorful, (and who doesn't?) salting, also called brining,

before you cook can improve it on all three fronts.

Salt does several things to the food. First of all, it amps up the taste because salt is a flavor enhancer. It does this without altering the flavor. Sugar, pepper, garlic, all the other spices and herbs change the flavor. But not salt. Salt turns the amp up to 11. And if you do it properly, it doesn't make the food taste salty.

First, it is important to know that all salt is not the same. The below quantities by volume have the same salinity because the grain sizes are different.

- **1 part Table Salt**
- **1 part Morton's Picking Salt**
- **1.3 parts Morton's Coarse Kosher Salt**
- **1.3 parts Windsor Kosher Salt**
- **2.1 parts Maldon Sea Salt**
- **2.3 parts Diamond Crystal Kosher Salt**

For more on the subject of how salt impacts food, read Meathead's article on [The Science of Salt](#). It contains an interactive salt calculator and much more info about the different kinds of salt.

Something else happens because of salt. When meat cooks, a significant amount of water evaporates from the surface and some gets squeezed out from muscle fibers that contract when exposed to heat. This water is called drip loss or purge. Lean cuts like chicken breasts can dry out easily. How do you cook these cuts to safe temperatures without turning them

into shoe leather? Surprisingly, salt can help because it helps protein glom onto water.

Salt (NaCl) is made of sodium (Na) and chloride (Cl) ions that carry electrical charges. These ions attack the proteins, causing them to unwind a bit, a process called denaturing. These altered proteins have a greater ability to retain water, so meats that have been pre-salted remain moister throughout the cooking process.

Researchers at *Cooks Illustrated* discovered that a chicken soaked in plain water and another soaked in a brine, a mix of salt and water, each gained about 6% by weight. They cooked both birds, as well as an unsoaked bird straight from the packaging. Weighed after cooking, the unsoaked chicken lost 18% of its original weight, while the chicken soaked in water lost 12% of its original weight, and the brined chicken lost 7% of its weight. Thus, brining counteracts one of the biggest problems of grilling by helping hold moisture that is near the surface, which almost always dries out by the time the center is properly cooked.

So salting before cooking, brining, has real benefits. And you need less than if you salt after cooking. And the amount of salt is small, not likely a risk to people on salt restricted diets.

There are four ways to brine: Wet brine, dry brine, brinerade, and injection. Here they all are defined.

WET BRINE

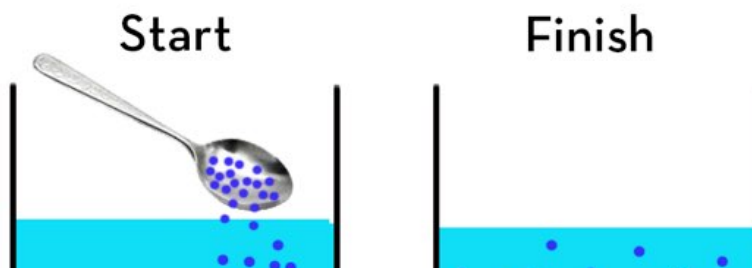


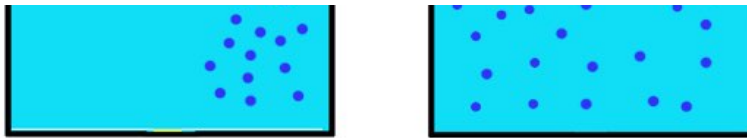
This is the traditional method of salting meat, submerging it in a solution of 5 to 10% salinity (the ocean is about 3.5% salinity). To wet-brine, you need to calculate the amount of water and the amount of salt, and after that you have a potentially large container that must be fit into the fridge.

Cookbooks tell us that salt is pulled out of the brine and into the meat by osmosis. Not true. The process is actually called diffusion. Take a look at this illustration.

Diffusion

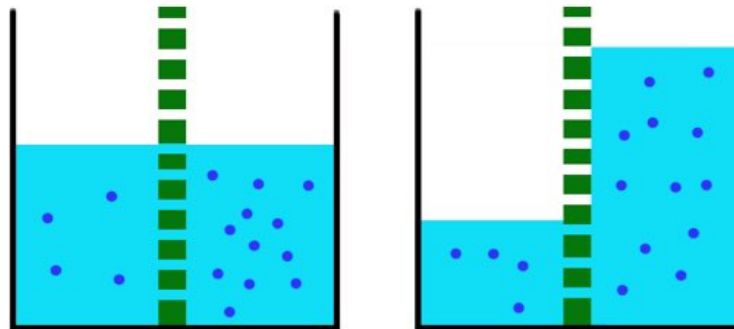
Salt moves from high concentration to low





Osmosis

Water moves from low concentration to high



When salt is added to a solution, like a piece of chicken which is about 75% water, the salt diffuses or spreads out and seeks equilibrium. Osmosis is when the water moves into salty places through semi-permeable membranes in an attempt to achieve equilibrium.

The problem with wet brining poultry is that it can make the skin soggy and harder to crisp. That's why wet brining works best on boneless, skinless breasts—food that cooks so

quickly that the absorbed moisture doesn't have time to drip out. Chicken thighs, on the other hand, are moist enough from fat that they really don't need wet brines.

If you decide to wet brine, the brine should contain 5 to 10% salt by weight. Here's a simple formula. Add one cup of hot water to a two-cup measuring cup. Then pour in salt, any salt, until the water line reaches 1 1/2 cups. That will be *about* 1/2 pound of salt by weight. Stir to dissolve then dump the solution into 1 gallon of cold water. This recipe results in a 6.4% brine regardless of the grain size of the salt.

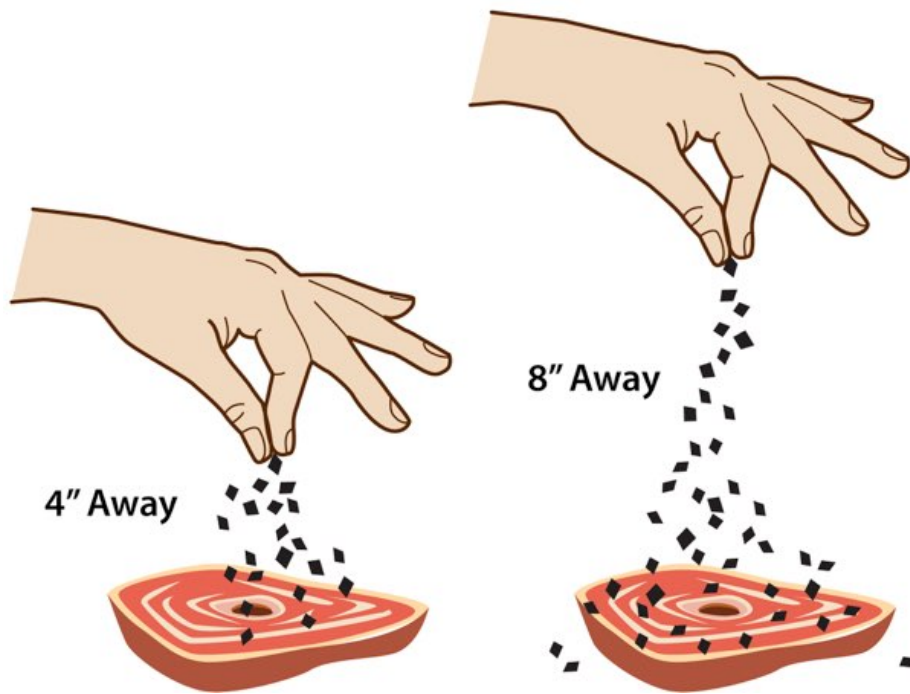
How do we know? Because a unit of salt by weight delivers the same salinity regardless of the grain size. A unit of salt by volume delivers different salinity because large grains have more air between them. In this recipe, the water infiltrates the voids between the grains of salt, compensating for the lower density.

Making brines is also easy with metric weight measurements, which are simple to scale up or down. Since 1 liter water = 1000 grams:

- **6% brine = 1 liter water with 60 grams any salt**
- **5% brine = 1 liter water with 50 grams any salt**
- **4% brine = 1 liter water with 40 grams any salt**

What's the right ratio of meat to brine? In general, soak 1 part meat in 2.5 parts brine. So for a 3 pound chicken (about 1.4 kg) use 3.5 kg of wet brine.

DRY BRINE



Dry brining is simpler and equally effective, plus it takes up less fridge space. Just skip the water. The late, great chef Judy Rodgers of [Zuni Cafe](#) in San Francisco brought the technique of dry-brining into the mainstream, and since discovering her process, which Meathead named dry brining, we almost never wet brine anymore.

To dry brine, you simply salt the meat before cooking. How much salt? Salt tolerance is so personal that it's nearly impossible to give an exact amount.

A good rule of thumb is ½ teaspoon of Morton Coarse Kosher Salt per pound of trimmed meat.

Please note that the saltiness of different types of salt varies significantly due to the size and shape of the grains. Our standard is Morton kosher salt, but if you want to use table salt instead, use half as much. [Click here to learn more about salt.](#)

If dry-brining a whole bird or a roast, concentrate more salt on the thicker parts, like the breasts. Bonus: Dry-brining helps poultry skin crisp.

How long do you need to brine? Salt is a slow poke and creeps slowly through the thicket of muscle fibers. How long should the meat be in the brine? Here are some rules of thumb, not precise. Use them for wet or dry brining, and always brine in the refrigerator.

- **½ inch thick meat: about ½ hour**
- **1 inch thick meat: about 1 hour**
- **2 inch thick meat: about 4 hours**
- **3 inch thick meat: about 12 hours**

You want to salt your foods early. If you only have 30 minutes, fine. If you have 2 hours, that's even better. Got 24 hours? That's better still. The good news is that salt

continues to migrate throughout the meat during cooking and does so slightly faster due to the heat.

Leave the meat uncovered on a rack in a pan. This is especially important for poultry because we want the skin to dry out a bit. Just be careful that vegetables and other raw foods do not come in contact with raw meat. And don't rinse it off before cooking. After a few hours most of it has gone in and is well past the surface anyhow.

Whether it's for 30 minutes or 24 hours, pre-salting gives you a better tasting, juicier meat because salt penetrates and helps meat hold onto its juices. Just sprinkle a generous amount of salt all over, about 1/2 teaspoon Morton kosher salt per pound of meat. What about marinating? Forget it. Marinating steaks is a useless technique because marinades don't penetrate the meat much and you end up throwing away most of the flavor when you throw away the marinade.

With dry brining we simply sprinkle plain old salt on the meat a few hours before cooking. No more than you would use at the table.



Sounds simple, but something complex and wonderful happens. You can see it working in the pictures here. In the first picture above the meat has been sprinkled with Morton Coarse Kosher Salt. The salt draws water out of the meat. The water dissolves the salt. See how the meat has become shiny with moisture and the fat has become splotchy?

Then, in the next picture, the meat re-absorbs the moisture (and much of the juices that have leaked out) bringing the salt in with it. Notice how the color of the fat has changed where the salt has soaked in. [Here's a slo-mo video of the process.](#)

When it is time to cook there is no need to rinse off the salt. It should all be inside the meat.

Once inside the meat, it doesn't go far. As with wet brining, it stays near the surface, but that's where the moisture is needed because that's where we apply the most heat.

How does this work? The AmazingRibs.com Science Advisor, [Prof. Greg Blonder](#), explains: "Salt is hygroscopic, which is a fancy way to say it absorbs moisture from the environment. Water is a 'V' shaped molecule. It has two positively charged hydrogen atoms on one tip of the V and one negatively charged oxygen on the other making H₂O. This asymmetry creates an electric field, kind of like a small magnet. The polar nature of water is why it's practically a universal solvent.

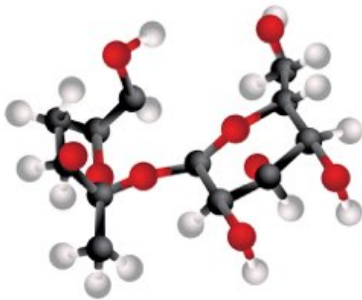
"When water in the air stumbles in very close to the NaCl crystal, the salt feels the attraction of the water's weak electric field, grabs it, and then breaks apart into a positively

charged sodium ion and a negatively charged chloride ion. When we sprinkle salt on a steak, water molecules, some from the air, but most from the meat, are captured on the surface of the salt crystal, and eventually, accumulate into a pool of briny liquid. Then, as the salty slurry diffuses into the meat, there is less salt on the surface to attract moisture, and the juices return to whence they came. Contrary to popular myth, there is no osmosis or cells breaking."

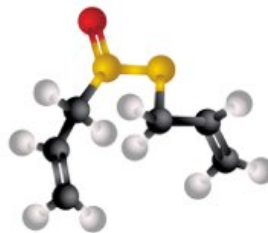
BRINERADES AND THE TRUTH ABOUT MARINADES



This fact always shocks people: Marinades rarely penetrate meat more than 1/8 inch. The molecules are just too large. Salt is only two atoms (NaCl), but sucrose (sugar) is 43 atoms ($C_{12}H_{22}O_{11}$). Likewise, garlic, onion, pepper, and all your other spices and herbs are all too large.



Sucrose $C_{12}H_{22}O_{11}$ (Sugar)



Allicin $C_6H_{10}OS_2$ (Garlic)



Water H_2O



Salt Ions NaCl

And for sure, oil in a marinade doesn't penetrate because meat is mostly water and oil and water don't mix. Here's a piece of chicken marinated for hours with a typical oil and vinegar marinade with some spices, herbs, salt, and some green food coloring to help us prove the point. As you can

see, there is no penetration (look at the bottom) except for salt, the slightly milky color about 1/4 inch below the surface.



If you add salt to your marinade, it will find its way into the food. We call that a brinerade. How to make it? Prepare your marinade (skip the oil) and add the same amount of salt you would if you were making a wet brine.

- **6% brine = 1 liter water with 60 grams any salt**
- **5% brine = 1 liter water with 50 grams any salt**
- **4% brine = 1 liter water with 40 grams any salt**

So why marinate? Because marinades *can flavor the surface*, and if there is acid in the blend, it can tenderize the surface. And if there is salt it can brine. On the downside, a marinade can make poultry skin soggy and prevent it from crisping, and wet surfaces don't brown as well as dry ones.

Remember: Brown is beautiful. Here's a way to improve marinades. Add salt to a marinade and it becomes a brinerade. The salt penetrates and helps retain moisture,

sugars help with browning, and everything else flavors the surface.

INJECTING



**“I think everybody should have a great Wonderbra.
There's so many ways to enhance.”**

— CHRISTINA AGUILERA

ou don't need a Wonderbra to enhance chicken and turkey breasts. Or, for that matter pork butt or beef pectorals. The

Y truth is that rubs, mops, marinating, brining, and sauces can deliver a lot of flavor to the *surface of meat*, but if you really want to get salt or flavor deep into meat, the solution is injecting.

Having an injector also opens up other fun possibilities: stuffing jam into donuts, syrup into ice-cream, and melted butter into squash.

Many meat processors routinely inject meats like turkey, chicken, and pork at the factory. Injecting, or enhancing as food processors call it, is a sure fire way to get the flavor and juiciness down deep. And it is the only way to get fats, herbs, spices and other large molecules deep into meat. You don't have to worry about oversalting, there's no waiting — you can do it at the last minute, you have less waste, no huge containers are needed, there are no refrigerator space problems, and there are few safety issues.

The secret to injecting is to go easy. A good guideline is to shoot for 1 to 2% salt. It is like brining and the salt helps retain moisture as well as enhances flavor. I skip the big flavors like garlic, pepper, and herbs that mask the natural flavor of the meat. I have judged pulled pork and brisket at barbecue competitions where the meat was gushing juice, but it didn't taste like meat. It tasted like apple juice and garlic. I want pork that tastes like pork, beef that tastes like beef, and turkey that tastes like turkey.

The best solutions are salt water, salted butter, or stock. And you don't need much. Muscle is 75% water and it is saturated. There isn't much room in there for more liquid.

Your injection will go in between the muscle fibers and bundles, not within the fibers, so you won't need much.

[Check out my recipes here.](#)

Many competition cooks like to inject with a product called [Fab B Light](#) or [Butcher BBQ Brisket Marinade](#), both moisturizers, tenderizers, and flavor enhancers. Fab B contains hydrolyzed soy protein, vegetable oil, sodium phosphates, monosodium glutamate, autolyzed yeast extract, xanthan gum, disodium inosinate, and guanylate. Butcher contains hydrolyzed vegetable protein (hydrolyzed soy and corn protein and salt, with partially hydrogenated vegetable oil [cottonseed, soybean] added), monosodium glutamate, sodium phosphate, and xanthan gum. Some traditionalists think this is way too Barry Bonds and are repulsed by the idea. The results speak for themselves. They are winning. A lot.

To inject, you need a gizmo, and something to put in it. [Click here for our reviews of injection gizmos.](#)

SEASONINGS AND RUBS



*M*eats are blank canvases to be painted with herbs, spices, and flavorful liquids. Rubs are simply spice blends that are sprinkled or rubbed onto meat before cooking. The rub should fuse onto the meat's surface and enhance the meat, but not overwhelm it.

It is helpful to think of salt as a treatment for the interior of a food, and herbs and spices, as a treatment for the exterior.

Every good barbecue cook should have a signature rub to brag about. In the recipe section of this book (below) there are a few rubs to get you started, then you can start riffing and invent your own. Once you find a rub recipe you like, make a batch and put it in a large spice shaker with a lid. If it clumps or cakes, take a tip from diner waitresses: Take some uncooked rice, place it in the oven at the lowest temperature to dry it out, and add it to the jar to absorb excess moisture.

Compared to salt, spices and herbs are huge molecules that just don't get more than a fraction of an inch past the surface. Think of salt as a treatment for the interior of the meat, and spices and herbs as an exterior treatment, like a sauce. The juices of the meat mix with the herbs and spices and they develop flavor during chemical reactions catalyzed by the heat of the fire. They form the flavorful crust.



Adding sugar to a rub or brinerade has some benefits. It aids in browning, especially at lower temperatures. Be aware:

Sugar burns easily, so you have to be really careful about temperature control and watch the cook very carefully. Also, if you smoke a wet brined meat that had sugar in the brine, it can get a slight hammy taste.

Beware: Some commercial rubs can be half salt. That's some expensive salt! But salt and spices should be applied differently. Because salt penetrates the meat, you need to apply it based on the weight of the meat. Because spices sit on the surface you apply them based on the surface area. For example: A slab of ribs and a hunk of pork shoulder might have the same amount of surface area but the shoulder can weigh 2 to 3 times the ribs and be many times thicker. So you need more salt on the shoulder but the same amount of spices. For this reason (and others) you should consider making your own rubs sans salt. [We have rub recipes on AmazingRibs.com for pork, poultry, beef, lamb, seafood, and more.](#) But if you don't want to bother, [we have bottled rubs with salt for sale on our site.](#) And yes, there is salt in them. Consumers expect rubs to contain salt and there just isn't room on the label to explain why it should be applied separately. Besides, if we left out the salt we would be priced out of the market.

Before sprinkling on the rub, many cooks like to coat the meat with a layer of mustard, ketchup, mayo, or water as a glue to hold onto the rub. These "slathers" have almost zero impact on flavor because they drip off and dry up during the cook. But they do work as a glue. Clint is partial to mayo because it is mostly oil and fat is flavor. Meathead just wets his hands and pats the meat to moisten it.

Don't be stingy with the rub. With a spice shaker with large holes, sprinkle on enough to coat the surface but not so much that you can't see the meat below. About 1 teaspoon for every 4 x 4-inch square is a good rule of thumb to start.

DON'T TRY TO BRING IT TO ROOM TEMPERATURE



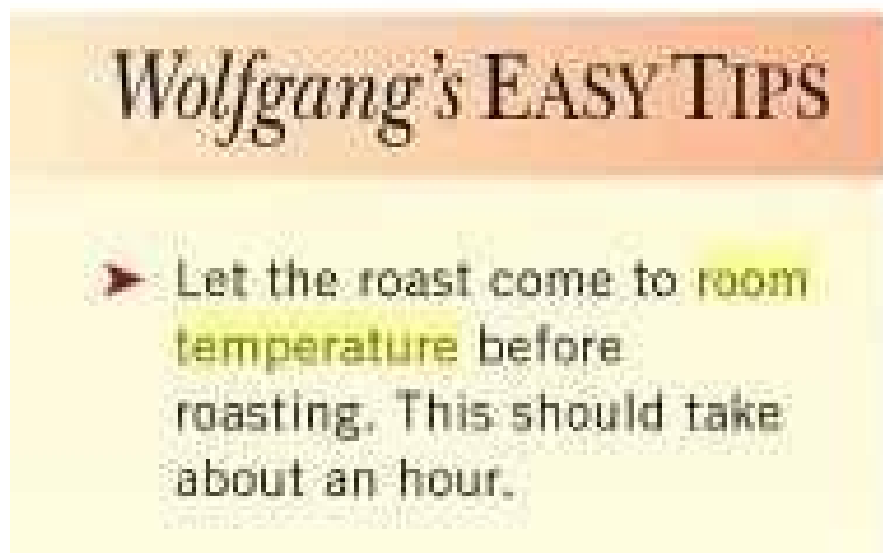
A lot of recipes, including steak recipes, say that you should take the meat out of the fridge an hour or two before cooking and "let it come up to room temp."



Here's the theory: Say you want a steak to be served medium rare, about 130°F . If your fridge is 38°F , then the meat must climb 92°F . But if it is room temp, 72°F , then it needs to

climb only 58°F. It will cook faster and there will be less overcooked meat just below the surface.

Here's a picture of a page from a cookbook by Wolfgang Puck, a brilliant and famous TV chef with many restaurants. He says a big old roast should come to room temp in about an hour.



We tried it with a 3/4 inch steak and a really accurate thermocouple. It took just over an hour for the center to come to room temp. A 1 1/2 inch steak took just over two hours for the center to come to room temp. A 4 1/2 pound pork shoulder 3 1/2 inches thick took, are you ready for this, 10 hours! After two hours, the pork shoulder was only 49°F in the center, and after four hours it was only 56°F. Just a bit longer than Chef Puck thinks. Worse, after five hours it began to smell funny.



Why so long? Remember, meat is about 75% water, and most of it is trapped in cell fibers. This makes it a great insulator. So even though the center of a pork butt is only 1 3/4 inches from the surface, it takes 10 hours for the 72°F heat to penetrate. A mere 30 minutes in the oven at 225 to 325°F will warm the meat as much as an hour at a room temp of 72°F.

Now we know that, in theory, all contamination on whole muscle meats like steaks and roasts will be on the surface and not deep into the meat. We understand that within a minute on a hot grill all of the surface microbes will be dead. But we also know that the population can double in 20 minutes at room temp. So the idea of leaving a steak at room temp for more than 30 minutes or so gives us the creeps, especially if there are cracks and pits in which microbes can hide. Especially knowing that some processors use blade tenderizers, tiny knives that cut into the muscle to soften it, but in the process push surface contamination deep into the center. This is a practice that should be banned. Especially

since we will be cooking the steak to only 130°F, a temp that can kill microbes, but it can take hours to kill them all. But more important, over extended periods of time, putrefaction and rancidity set in, the meat starts to smell bad, and the entire flavor profile can change.

And it should go without saying, never leave poultry, burgers, or ground meat at room temp for more than a few minutes. They are susceptible to contamination within the meat and sitting around can really mess up these meats.

Think of letting cold meat sit at room temp as cooking it in a 72°F oven and then moving it to a hotter oven. It will take much longer than if you just put it in the hotter oven to begin with. But the reverse sear theory comes into play. Gentle heating helps ensure that the meat's internal temperature is more even from top to bottom than if it is exposed to high heat right away. But the microbial danger zone is in play as well. At 72°F, microbes are very happy and reproduce with abandon.

A steak cooked reverse sear. In the reverse sear process you are heating gently in a 225°F oven during the initial stage and then searing at very high "Warp 10" temperatures at the end. As we have shown, it can take two hours for a steak to get to room temp and in the oven/grill/pit it gets there in about 15 minutes. It is actually faster to go directly to the grill from the fridge.

A steak seared at Warp 10 first. You are clobbering the meat with a lot of heat and if you want to serve the meat at optimal medium rare, 130°F, you want the interior to remain

relatively cool so it doesn't overcook. Letting the meat come to room temp is actually self-defeating in this scenario. In fact, you are better off cooling it down in the freezer a few minutes.

Also, we now know thanks to the AmazingRibs.com science advisor, Prof. Greg Blonder, smoke sticks better to cold surfaces. So if you want a smokier tasting steak, take it straight from the fridge to the grill.

Here are three beer cans. The one on the right sat on a desk during Blonder's experiment. The one on the left was filled with ice water and placed in a smoker. The one in the middle was empty and placed in the smoker. You can see that the cold wet surface of the one on the left attracted more smoke and thus more flavor.



So in our homes, it's out of the fridge and onto the grill or oven.

NO RESTING



Do not tent chicken with foil when it is finished cooking because the steam trapped under the foil softens the skin. Resting does not redistribute juices (that's a myth). And while it is resting, see all that steam? It is moisture that you want in the meat! Serve it hot and moist. Don't let it sit around cooling and drying out and overcooking via carryover.

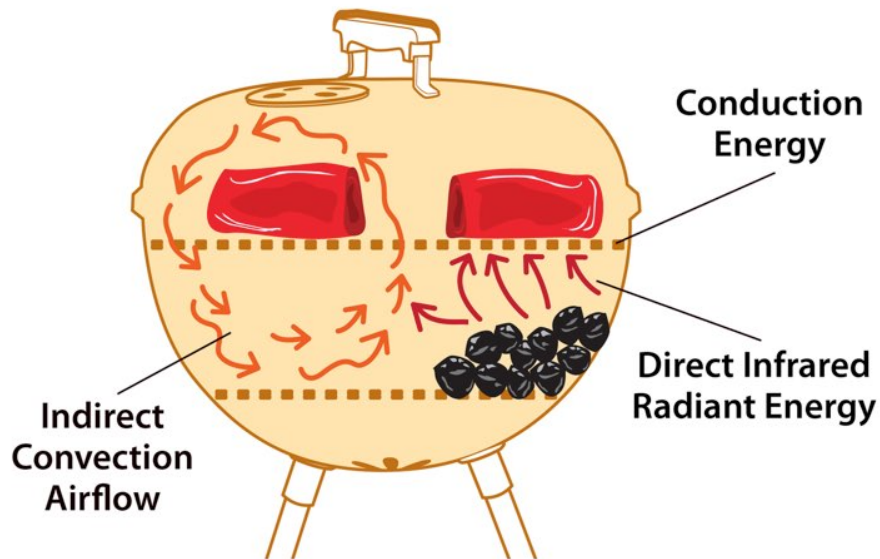
3 TYPES OF ENERGY AND 2-ZONE COOKING



THE 3 TYPES OF ENERGY

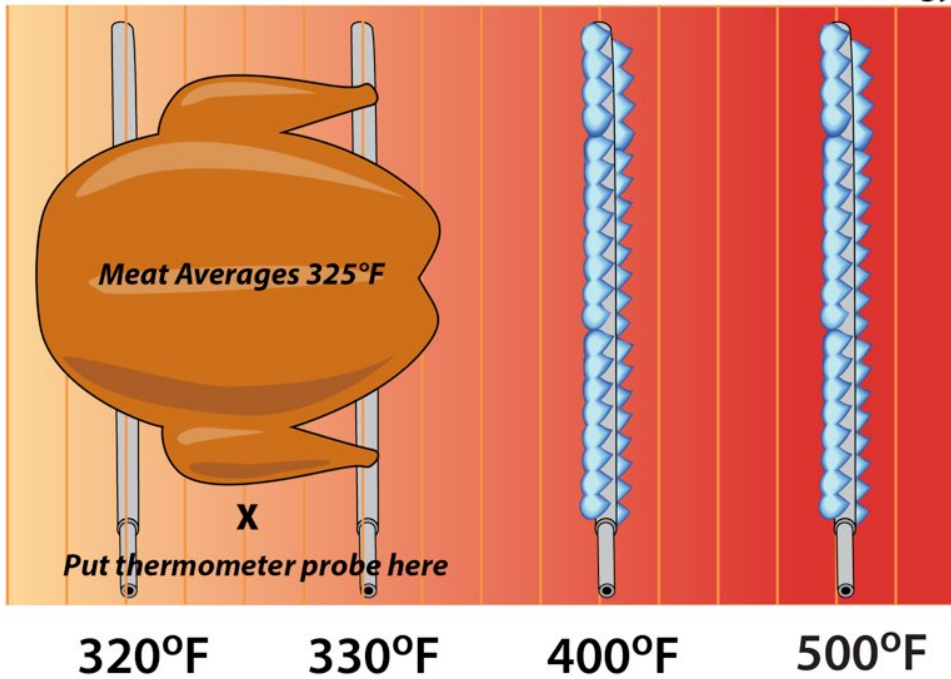
Inside a grill there are three types of energy: Conduction, infrared radiation, and convection airflow. It is important to think of these as energy rather than temperature. As an example, turn your indoor oven to 200°F and stick your arm in there. You can do this. It won't burn your hair off. Now touch the metal grates. When you get back from the hospital you will understand that, although the air and the grates were both 200°F, they held and delivered vastly different levels of energy. That's why thermometers are important in measuring energy in a grill but they don't tell the whole story.

Convection vs Conduction vs Radiant Energy



Indirect Convection Airflow

Direct Infrared Radiant Energy



Conduction is the most concentrated energy and a basic example is food in contact with hot metal. Conduction from hot metal is what creates grill marks on the food.

Infrared radiation (IR) usually comes from flame or glowing embers directly below the food. This concentrated form of energy packs a wallop and helps sear foods and get dark crusts in a hurry. When you stand in the sun, you are getting bombarded by IR. Yes, there is ultraviolet (UV) that causes sunburn, but there is much less UV than IR. When you place food directly above hot coals or gas flames, you are subjecting it to IR. It is like putting it in the sun.

Both IR and conduction produce enough energy to sear foods. Searing is when food turns brown as a result of two chemical reactions called the Maillard reaction and caramelization. That brown is flavor.

You can put a thermometer in a grill but it can be misleading because conduction and radiant energy are best measured in calories, not degrees of temperature. That's why we often refer to IR on as Warp 10 rather than measuring the air temp, a dumb Star Trek reference.

Convection airflow is the warm air circulating inside the grill, especially when the lid is down. Convection is not very good at searing. People often brag that their Big Green Avocado can hit 600°F or more, and although that is great for cooking food, it is not as good at browning it as conduction or radiation. Cooking with convection energy is best called roasting.

Once you understand these basics of energy transference you can use them to your advantage. And you thought you left physics behind in high school.

THE IMPORTANCE OF 2-ZONE COOKING

Cooking, indoors or out, is all about controlling energy and the way to do that is with 2-zone cooking. The concept is simple. You divide your grill in half. One side has IR from glowing coals or flame, the other side has no energy source beneath it and is warmed only by convection airflow. With this setup you can move food from gentle low energy that slowly warms the food and doesn't shrink the proteins and squeeze out juices, to rip snorting high energy that can sear the exterior.

For this reason we are not big fans of egg shaped kamados. Most of them are not easily set up in 2 zones.

PART V TOOLS



You don't need a lot of fancy expensive tools to get started. You can accomplish wonders with a simple kettle grill or a two burner gas grill, a pair of tongs, a brush, and a digital thermometer.

That said, there are some great upgrades and enhancements that come in handy if you can afford them. Here are some of our recommendations.

At AmazingRibs.com we employ the world's only full-time grill and smoker tester and he maintains a database of detailed reviews and ratings of hundreds of cookers.

We also have an electrical engineer outfitted with special equipment to test and rate and review thermometers, the single most important tool for making safe and tasty food.

In addition, our experienced team tests and reviews everything from pizza ovens, to tongs, to spatulas, grill grates, knives, knife sharpeners, gloves, coolers, scales, pots and pans, kitchen equipment, all manner of accessories, and every year we pull together a list of the best new products and a great gift guide.

[Click here to check out our Product Reviews section.](#)

CHARCOAL GRILLS



Charcoal grills are the most versatile all-purpose outdoor cooker. When set up properly, the good ones can do both high energy infrared searing and low energy convection air roasting, as well as smoking. Their main advantages are that charcoal generates more energy than most gas burners and you can capture more smoke because the best charcoal grills allow you to control airflow. Gas grills have large permanently open vents so you can't easily contain the smoke, but they can do a respectable job. You just need to burn through a lot more wood.



Here is a picture of two slabs of ribs, one cooked on charcoal, one on gas. You can see the difference in color caused by the differences in the smoke.



To set up your grill for 2-zone cooking, simply pile lit charcoal briquets on one side of your grill's charcoal grate to create a hot (direct) infrared heat zone and a cool (indirect) convection airflow zone. You can also add a water/drip pan on the empty side of the charcoal grate and/or a second one directly above the charcoal on the main cooking grate if you wish. If you add water pan(s) you are adding moisture to the atmosphere, and if the water pan is above the heat source you are further protecting the meat from direct heat; the water absorbs heat, helping to keep the temperature down but does not steam the meat which will make it mushy. If you keep the oven temp at 225°F, the water should not boil because the surface area will allow evaporation that will cool the water keeping it below 212°F. Hard to believe, but true. If the water is boiling, you are running hot.

Intake dampers (on the bottom) are more effective at controlling the temperature than the exhaust dampers at the top of the grill because they reduce the supply of oxygen to the coals. So monkey with the intake dampers to control temperatures. Take your time getting the temperature right and try to maintain it throughout the cooking process.

Another reason for water pans is because water condenses on the relatively cool meat and keeps it cool, slowing the cook. Furthermore, smoke particles stick to the wet surface better than dry surfaces.

Cooking at 225°F will allow the meat to roast low and slow, liquefying the collagen in connective tissues and melting fats without getting the proteins knotted in a bunch. It's a magic temperature that creates silky texture, adds moisture, and

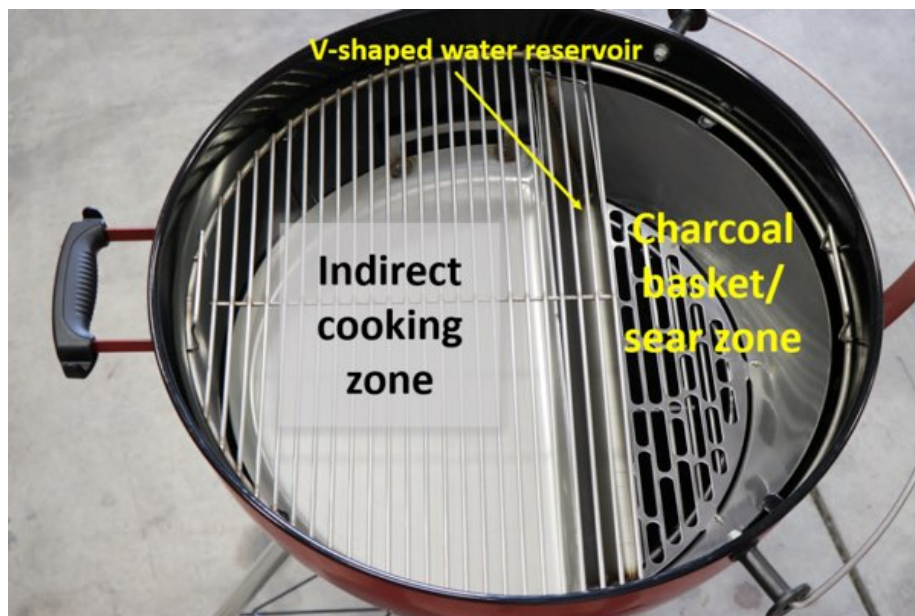
keeps the meat tender. If you can't hit 225°F, get as close as you can. Practice without food. Click here for more about how to [calibrate your grill](#).

While lump charcoal is an option, we prefer briquets because they give us more control and we are control freaks ([read our article on charcoal to see details](#)). Absolutely do not use the instant igniting stuff that has solvent in it.



Chimney starters are by far the best way to start charcoal, especially for long slow cooking where the smell of the solvent in charcoal starter fluid can ruin the taste of the meat. [Read how to start a charcoal fire here.](#)

If you are using a charcoal grill or smoker, wait until the coals are white. They emit less smoke and the smoke from charcoal is not as good tasting as the smoke from wood. Then add about four ounces of dry hardwood or fruitwood to the fuel for at least the first hour of cooking. Do not overdo it on the wood as too much can result in a bitter and overpowering smoke flavor in the end product. If the result isn't smoky enough, add more the next time you cook.





If you are shopping for a grill that can also smoke, a great inexpensive solution is the good old fashioned Kettle. A stripped down model of the venerable Weber Kettle is still less than \$200, and with the addition of a device called the Slow 'N Sear (above) for about another \$100, you get a system that can both grill and smoke superbly, albeit with limited capacity. On one side it corrals all the coals behind a water reservoir; the food goes on the indirect side to smoke-roast at the perfect temperature. When you want to sizzle on the sauce (or sear a steak) you place it right above the glowing coals.



Another option are the Slow 'N Sear Kettle Grills. Similar to the Weber, it has several modernizations not the least of which, the two-zone insert is included. It has four legs, a thermometer port, and a side shelf.



One of our favorite charcoal grills is the [Portable Kitchen 360](#) (a.k.a. PK 360) for about \$800 (above). Its rectangular shape makes it easy to set up in 2 zones and the coals are close to the cooking grate, making it superb for searing steaks.



Our all-time favorite is the [Hasty Bake 35.7](#) (above) for about \$3,600. It has all the bells and whistles and best of all, you can raise and lower the charcoal grate to control heat. Hasty Bake makes less expensive models you should consider if you fainted when you saw that number.

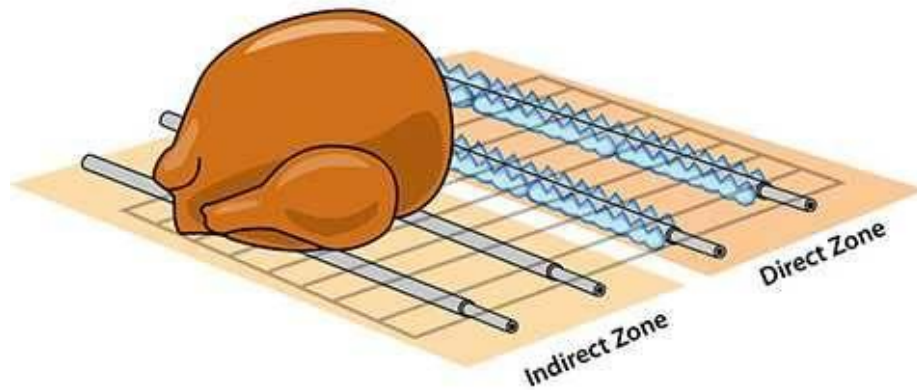
[Click here to see our favorite charcoal grills.](#)

GAS GRILLS



If you are using a gas grill you can easily create a 2-zone set-up and we think 2-zone is crucial for almost anything you are grilling. Most gas grills come with more than one burner nowadays because the concept of indirect cooking is becoming better known. When shopping for a gas grill, the more burners the better. Two is the minimum, three is better, four is best. You will appreciate the real estate and the ability to control temperature. Since law requires gas grills to have open vents, none of them allow you to control airflow, so there isn't a real significant difference between gas grills when it comes to smoking.

2-Zone Setup On A Gas Grill



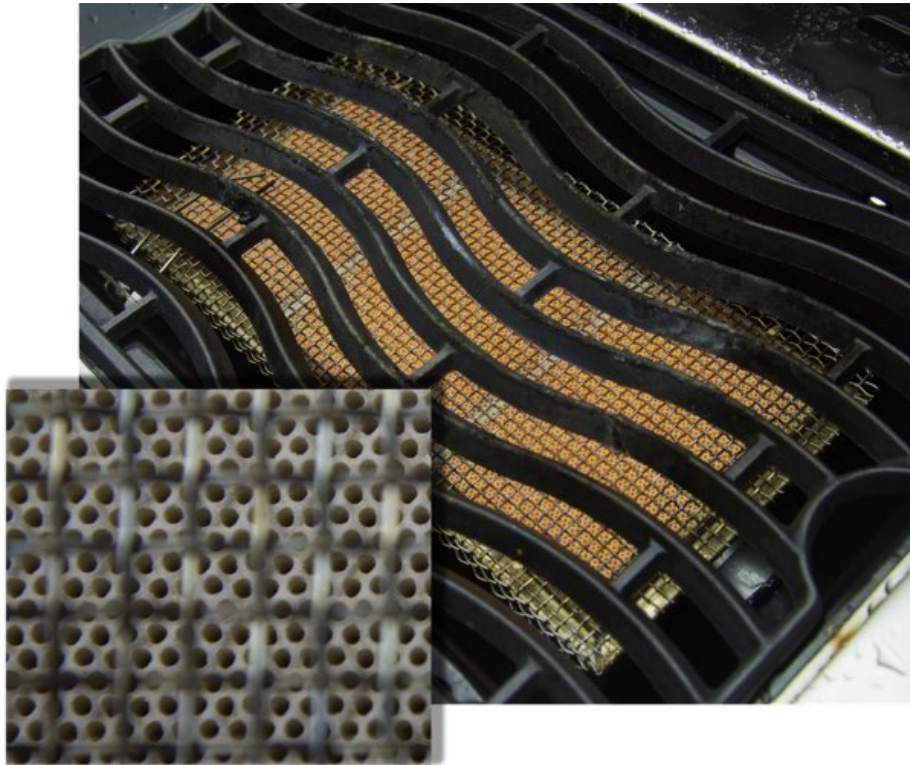
If you have a grill with only one burner, or if you have more meat than will fit in the indirect zone, try this technique. Put the wood as close to the flame as possible.



Regardless of how many burners you have, if you are going to smoke, put a pan of water between the burner and the food. The water absorbs heat and helps minimize fluctuations in temperature. The moisture also mixes with the smoke and propane combustion gases and creates flavors you cannot get with smoke alone. It also condenses on the meat cooling it and making a sticky surface for smoke to stick to.

The big difference among gas grills is their ability to sear at high temperatures. Unfortunately, most gassers just don't generate enough IR to do a great job of searing. A few come with sear burner tubes, but even they are usually anemic.

The best sear burners are made of ceramic honeycombs like this one:



For a propane grill, make sure you always have a spare tank. Don't risk running out. Natural gas grills never run out because they are connected to the household gas supply.

Now that you have set up your grill for indirect cooking, throw some wood on the flames or the deflector right above the flames, place the meat as far from the heat source as possible, close the lid, and let the convection airflow, smoke, and seasoning do their jobs!

[Click here for a look at our top rated gas grills.](#)

SMOKERS



Steak likes a little smoke but not a lot. So usually we don't smoke them.

But if you want to, the best way to smoke is a dedicated smoker, but it is not hard to convince a charcoal or gas grill to do it very well, thank you. There are many different types of smokers ranging from about \$200 to \$20,000+. Selecting one is a whole 'nother book so let us refer you to [some articles and videos](#) on AmazingRibs.com, and our [searchable database of hundreds of smokers](#) tested by the world's only full-time grill and smoker tester, our very own Max Good. (We don't sell anything, but we do link you to places to buy.)

Most smokers cook food entirely with indirect convection airflow. The fire is away from the food. A few smokers use direct heat but the coals are kept at a distance.

There are many different types of smokers ranging from about \$200 to \$20,000+. Selecting one is a whole other book so let us refer you to [some articles and videos](#) on AmazingRibs.com, and our [searchable database of hundreds of smokers](#) tested by the world's only full-time grill and

smoker tester, our very own Max Good. (We don't sell anything, but we do link you to places to buy.)



If you are just getting started and have a limited budget, we recommend the charcoal burning [Pit Barrel Cooker](#) (above) for about \$350 delivered to your door fully assembled and ready to go.



The 18 inch Weber Smokey Mountain (above) is another great choice for about \$330.

An excellent choice, but a bit more expensive, would be one of the many high-tech pellet smokers with precision digital temperature controls. They burn small pure sawdust pellets about the diameter of a pencil and function as thermostatically controlled outdoor ovens with smoke. Just set the temperature and walk away.



Small portable pellet smokers start at about \$400, and full-size smokers about the size of a gas grill start at about \$700. We gave high marks to the [Grilla Silverbac Alpha](#) (below).



[Here's a list of all our top-rated pellet smoker models.](#)

For the very best smoke flavor, [we are partial to log burners.](#) The good ones are not cheap. They start at about \$800, so please don't be suckered into buying the cheap offset smokers at the big box hardware stores. Beware, log burners require constant tending and skill. Beginners will make mistakes and ruin a few meals. Below is a Lang reverse-flow offset smoker which is highly recommended. [Click here to learn more about offset smokers.](#)



The odd looking thing below is a [Karubecue](#). It employs a number of brilliant innovations that make it the best

backyard log burner on the market. It costs about \$1,440 at press time.



There are gas smokers and we like them because you can set em and forget em. They don't require the vigilance that charcoal and log burners demand. And they are inexpensive. Alas, some make temp control difficult, so be sure to check our reviews before buying.

There are electric smokers, but the wood smolders and does not burn in them. Burning wood produces better tasting smoke than smoldering wood so for that reason we are not fans of electric smokers.

Looking for a new outdoor cooking rig? Here's a web page with a lot of info, videos, and links on how to select a grill or smoker.

ABOUT WOOD



Then there is smoke, which we think of as a spice or flavoring element. Some of it comes from charcoal (gas has no flavor), some of it comes from vaporized drippings of juices, fat, and spices. But the best smoke flavor comes from burning wood.

Charcoal is not a very good source of smoke. When you first light charcoal it produces an acrid smoke. When it is fully ignited and has a thin coat of white ash, charcoal produces very little smoke. That is when you add real wood.

The best smoker is a dedicated smoker, but it is not hard to convince a charcoal or gas grill to do it very well, thank you. All you need to do is use a 2-zone set-up and throw hardwood, fruitwood, or nutwood on the flames and let it burn. That's right, let it catch fire and burn. You won't see a lot of smoke, but that's what you want. The truth is that billowing white smoke from smoldering wood does not taste as good as "blue smoke," smoke whose particles are so small they don't diffract much light, so the smoke is thin, pale blue, and practically invisible. Those flames you see are combusting impurities that impart undesirable flavors. So let it burn!

Never use any kind of pine or sappy, soft wood unless you want meat that tastes like turpentine. Never use construction lumber because it is often treated with poisonous chemicals to discourage rot and termites.

Charcoal is not a good source of smoke. When you first light charcoal it produces an acrid smoke. When it is fully ignited and has a thin coat of white ash charcoal and produces little smoke. That is when you add real wood.

We don't care what you have read, there is no need to soak wood before adding it. First of all, wood doesn't absorb much water. That's why they build boats from wood! We have soaked wood and cut it open and the interior is bone dry.

There is only a little moisture captured on the surface. When we weigh wood soaked overnight it gains less than 5% of its original weight.

Secondly, all that billowy white smoke from smoked wood is really steam because the wood cannot combust until the water on the surface of the wood evaporates at 212°F. Then the wood can go up in temperature to 500°F+ where it can combust. At that point, it burns with a bright blue and orange flame, making clean blue smoke with few impurities.

Don't obsess over which wood to use . The differences are subtle and you should concentrate first on getting quality meat, trimming it, salting it, rubbing it, temperature control, and sauce management. Wood theory is a book length topic unto itself, so if you want to know more and learn why we tell you not to obsess over wood types, [click here to learn about combustion and the different kinds of wood and smoke](#).

Do not overdo it on the wood as too much can result in an overpowering ash flavor in your food. Go easy the first few cooks and add more as you gain experience.

On charcoal or gas cookers, start with 4 to 8 ounces by weight of [chunks, chips, or pellets](#) for a mild smoke flavor that complements the meat and seasoning without overwhelming. No matter how much food you are cooking, 8 ounces should be enough. You don't have to be precise, just measure it in some fashion so you have a baseline for your next cook. Then you can add or subtract if you wish.

THE ABCS OF FIRE EXTINGUISHERS



*A*lways keep a fire extinguisher near your grill, smoker, and in your kitchen. Water will only spread grease fires. The best extinguisher is rated ABC.

- **Class A** fire extinguishers are for paper, wood, cardboard, and most plastics.
- **Class B** fire extinguishers are for flammable liquids such as gasoline, kerosene, oil, and grease.
- **Class C** fire extinguishers are for electrical equipment and wiring.
- **Class D** fire extinguishers are for combustible metals including magnesium, titanium, potassium, sodium, and some other chemicals.
- **Class ABC** fire extinguishers can handle most everything except some class D materials. This is the one you want. Beware, they contain a yellow powder that can damage electrical devices.

COOK WITH A THERMOMETER, NOT A CLOCK



COOK WITH A THERMOMETER, NOT A CLOCK

Different cuts of meat vary significantly in tenderness, fat content, and collagen content. Some are best cooked hot and fast, some better cooked low and slow, and some must be cooked with a combination of hot and slow to reach their optimal taste and texture. [Click here to read an article on the subject of cooking temps](#) and info on how to get this food temperature guide with more than 80 benchmark temperatures.



Meatheads
AMAZINGRIBS.COM **FOOD TEMPERATURE GUIDE**
 "By far the leading resource for BBQ and grilling information" Forbes

Beef, Lamb, Venison, Duck Breasts (Steaks, Chops, Roasts) - USDA Minimum 145°F (63°C)	
Blue, "Pittsburgh"	110-120°F (43-49°C)
Rare	120-130°F (49-54°C)
CHEF TEMP Medium Rare	130-135°F (54-57°C)
Medium	135-145°F (57-63°C)
Medium Well	145-155°F (63-68°C)
Well Done	155°F (68°C) or more
Pork, Raw Ham, Veal (Steaks, Chops, Roasts) - USDA Minimum 145°F (63°C)	
Rare	120-130°F (49-54°C)
Medium Rare	130-135°F (54-57°C)
CHEF TEMP Medium	135-145°F (57-63°C)
Medium Well	145-155°F (63-68°C)
Well Done	155°F (68°C) or more
Chicken, Turkey (Whole Or Ground), Including Stuffing - USDA Minimum 165°F (74°C)	
SV TEMP Medium Well	160-165°F (66-68°C)
CHEF TEMP Well Done	160°F (71°C)
Ground Meats & Raw Sausages - USDA Minimum 160°F (71°C)	
SV TEMP Medium	145°F (63°C)
Grill or pan fry these risky meats to 160°F (71°C) and make them juicy by using a 20 to 30% fat blend	
Tuna - USDA Minimum 145°F (63°C)	
CHEF TEMP Rare	120-125°F (49-52°C)
Other Fin Fish - USDA Minimum 145°F (63°C)	
CHEF TEMP Medium Rare	125-135°F (52-57°C)
Lobster, Crabs, Crawfish, Shrimp, Scallops - USDA/CHEF/SV TEMP When opaque 131°F (55°C)	
Hams, Hot Dogs, Precooked Sausages - USDA Minimum 140°F (60°C)	
CHEF & SV TEMP Sausage	140°F (60°C) or more
BBQ/Roasted Ribs, Shoulders, Briskets, Legs, Rumps - USDA Minimum 145°F (63°C)	
CHEF TEMP Tender, Tugs Apart	202°F (95°C)
Clams, Oysters, Mussels - USDA/CHEF/SV TEMP when shells open	
Leftovers - USDA/CHEF/SV TEMP Minimum 165°F (74°C)	
Other Useful Temperatures	
0°F (-18°C)	Best freezer temperature.
23°F (-4°C)	Best freezer.
32°F (0°C)	Freezer.
34-38°F (1-4°C)	Best refrigerator temperatures.
130-135°F (54-57°C)	Minimum safe, most meats are most tender and juicy.
131°F (55°C)	Meat pathogens begin to die. Minimum safe with long.
133°F (57°C)	Connective tissues begin to contract and squeeze out juice.
150-165°F (60-74°C)	Large cuts of low temps stall and do not rise for hours.
160°F (71°C)	Soft-boiled eggs.
160-165°F (71-74°C)	Instant kill zone. Most pathogens die in seconds.
160-200°F (71-96°C)	Collagen melt, form gelatin, making meat succulent.
170-180°F (77-82°C)	Cornish begin to set.
173°F (78°C)	Alcohol begins to boil.
180-185°F (82-85°C)	Wine begins to simmer.
185°F (85°C)	Cornish begin to break.
190-200°F (87-93°C)	Meat broths are done cooking.
210°F (100°C)	Boiled potatoes are fully.
212°F (107°C)	Sea level boiling point. Submerse 2" every 100" above.
225°F (107°C)	Best temp for low & slow roasting (high cuts of meat) - X.
310°F (154°C)	Roasted browning evaporates.
325°F (163°C)	Minimum cooking temp for broiling poultry skin.
425°F (203°C)	Before thermometer cables can melt.
450°F (232°C)	Before pans can emit toxic gases.
500-700°F (260-390°C)	Hardwoods start to smoke.
700-1000°F (390-538°C)	Hardwood gases produce flames.
Fats & Oils	
95-130°F (35-54°C)	Animal fats start to soften and melt.
300°F (149°C)	Butter starts to smoke.
325-375°F (163-191°C)	Extra virgin olive oil begins to smoke.
350-375°F (177-191°C)	Best oil temp for most deep frying.
361°F (183°C)	Some animal fats begin to smoke.
370°F (188°C)	Lard begins to smoke.
375-400°F (190-200°C)	Virgin avocado oil begins to smoke.
390°F (199°C)	Engorged oil begins to smoke.
400°F (204°C)	Corn oil begins to smoke.
400-450°F (200-230°C)	Hydrolytic oil begins to smoke.
440°F (222°C)	Vegetable oil begins to smoke.
450°F (232°C)	Peanut oil, corn oil, soybean oil begins to smoke.
482°F (250°C)	Ghee begins to smoke.
510°F (265°C)	Safflower oil begins to smoke.
Soybean	
217-222°F (103-106°C)	Best temp for most jams and jellies.
230-234°F (110-112°C)	Thermostatic Stage. Some (table sugar) melt and make syrup. Fructose starts to caramelize.
235-240°F (113-116°C)	Soft Ball Stage. For fudge, pullens.
244-250°F (118-121°C)	Hard Ball Stage. For caramels.
290-295°F (150-142°C)	Soft Cook Stage. For nutty.
300-310°F (149-154°C)	Hard Cook Stage. For brittle, lollipop.
320-350°F (160-177°C)	Clear Liquid Stage. Caramelization.
350°F (177°C)	Best Super Stage. Starts to burn and tastes bitter.

SOUS VIDE (SV) RULES OF THUMB
 These times and temps are starting points that will produce much that please. Experiment!

A - TENDER CUTS
 1 - Cook. Seal, then sous vide for 24 hours at the temp or less.

2 - Optional. Chill thoroughly in the bag.

3 - Rub. Remove from bag, pat dry, sprinkle generously with salt-free rub or lightly with salted rub.

4 - Finish. Sear in a hot pan, griddle, or on a grill until you like it, or smoke at 225°F (107°C) and then use. Bring to the temp of left. Glaze or sauce if you wish.

B - TOUGH CUTS
 1 - Cook. Seal, then sous vide at 145°F (63°C) for about 24 hours.

2 - Optional. Chill thoroughly in the bag.

3 - Rub. Remove from bag, pat dry, sprinkle generously with salt-free rub or lightly with salted rub.

4 - Roast or smoke. Roast or smoke at 225°F (107°C) until 145-155°F (63-68°C).

5 - Optional. Thoroughly dry the surface. Sear in a hot pan, griddle or on a grill. Glaze or sauce if you wish.

For ratings and reviews of more than 150 accurate, inexpensive digital thermometers and BBQ thermocouples visit AmazingRibs.com/thermometers

More menu info on Meatheads.AmazingRibs.com
 Version 5.8 Copyright © 2020

This is why cooking times in recipes are guesstimates at best. Think about the absurdity of a recipe that says, "cook the steak for six minutes on the first side and then four minutes on the second side." How long it takes to cook depends on how hot the air is, how hot the cooking surface is, how thick the meat is, and your target temp.

Depending on the grill, cooking steaks could take twice as long or half as long. Thick steaks take more time, and if you want them rare, they'll take less time than if you want them well done. [Click here for more on cooking times and what controls them.](#)

[You cannot tell if meat is safe or cooked to the proper temp by looking at it.](#) When you cut into meat to look at it, it can change in a few minutes after it has been exposed to oxygen. Compounds in marinades and brines can impact color. Sometimes vegetables in the grill can produce gases that alter meat color. It has long been thought that when chicken juices run clear the meat is safe, but modern chicken farming has changed that. Click here to [read how we bust the myth of clear chicken juices.](#)

The truth is, meat can go from succulent to sucky in just a few minutes. The only way to be sure about doneness is to use a digital thermometer. Overcook meat and you've wasted your money. Undercook it, and you could give someone a tummy ache or much worse. That is why you ALWAYS cook with a thermometer, not a clock. This is the 21st century. The digital age. Stop using 19th century technology. Ditch your dial telephone and your dial thermometer.



And while you are at it, get a digital oven thermometer. The cheap dial thermometer that came on your grill or smoker is probably off by 25 to 50°F like the one above. I have seen them off by 100°F!

[Click this link for a buying guide to thermometers with more than 150 test results from our on-staff electrical engineer.](#)

As the internal temp of meat climbs, more water gets squeezed out, and the meat becomes drier. In general, most meats are juiciest when cooked to medium rare, 130 to 135°F internal temperature.

But that's not hot enough for safety in some meats. Ground meats and poultry are health risks at those temps. Ground meats need to be cooked to 160°F, and poultry needs to go to 165°F to kill pathogenic bacteria. But there's more to the story than that. You can actually serve these meats at lower temps if you know the rules. **[Read my article on meat temperatures.](#)**

Meats with a lot of connective tissue such as beef and pork ribs, pork shoulder, and beef brisket, are too tough at these lower temps. They need to go up to 200 to 205°F in order to gelatinize collagens and melt fats. That's well past well done, and yes, water is lost, but the gelatin and melted fats lube the meat and make it taste tender and juicy.

Be aware that if you let meat sit around after you remove it from the heat, the heat built up in the outer layers will push down to the center and overcook the meat, a process called **[carryover cooking](#)**. The good news is that **[resting meat](#)**

is probably not necessary, despite what all the TV chefs say. For more about ideal serving temps, read my detailed Food Temperature Guide, which has a handy printout for your fridge.

A good digital thermometer is the most important tool you can own. As for monitoring and maintaining the desired grill/smoker temperature, the built-in thermometers are generally worthless. They are called bi-metal thermometers and most are slow and inaccurate. To become master of your instrument, you need a good *digital* oven thermometer to measure the air temp.



You also want a thermometer that can measure food temperature in 5 seconds or less. Here is the Thermoworks Dot for about \$40, the best all-purpose thermometer going for the price. It can be clipped to the cooking grates to measure oven air temperature, inserted into meat to provide constant readings throughout a long cook, or inserted in meat for rapid spot readings. For other options, go to AmazingRibs.com and click on Ratings & Reviews and then thermometers. We have an electrical engineer equipped with

special equipment to measure accuracy and speed. He has tested and reviewed hundreds.

They range from \$20 to \$200 and can have as many as six probes. Several have two monitors, one attached to a probe on a cable like the Dot And the other that it talks to with wireless tech so you can carry a monitor in your pocket while you cut the lawn or watch the game. There are even thermostats that can control the temperature of your charcoal grill.

SOUS VIDE QUE



The ultimate solution to preventing dry meat is cooking with a technique called *sous vide* and then finishing it on the grill. We call this *sous vide que* and we discuss this marvelous method, with videos [on this page on our website](#). For a Deep Dive on the subject, we have written an ebook called [“Sous Vide Que Made Easy: How To Deliciously Marry The Grill And Smoker With Sous Vide”](#) .

When cooking sous vide you first salt the meat then put it in a plastic bag, squeeze the air out of the bag, and submerge it in water that is heated with an “immersion circulator.” It can hold the temperature precisely and consistently at, let’s say, 131°F for red meats and 154°F for poultry. You wait for the center of the meat to reach the target temp, and hold it there long enough to make it tender and pasteurized, about two hours. It is impossible to overcook this way.

The problem with sous vide is that, although the meat comes out tender and juicy, red meat surface is ugly grey and poultry the skin is flabby and bland. That's where the "Que" comes in. You finish it by adding the rub and placing the meat over a hot grill for a few minutes to create the Maillard reaction crust and flavors of browning. Another option after the sous vide step is to put the meat in a smoker at 225-325°F for 30 minutes. The results are extremely tender and tasty.

ADDITIONAL TOOLS



In addition to the smoker/grill and fuel, there are a few other tools that you will want to have on hand before you start cooking, including:

TONGS

These [12-inch tongs from OXO](#) make it simple to move chicken parts around your grill. They also lock closed for easy storage.



A SILICONE SAUCE BRUSH

When it comes to saucing, bristle brushes are really hard to clean and can harbor pathogenic bacteria. Throw them out and get [a good silicone sauce brush](#). They are easy to clean, they're dishwasher safe, and they load up with a lot of sauce.



A GOOD CUTTING BOARD

We are partial to plastic cutting boards because they can be cleaned in the dishwasher and if they get gouged you can sand them smooth. This [double sided one from OXO](#) has grips so it doesn't slide around on the counter and gutters along the edges to capture juices. It is under \$20.



A FILLET KNIFE

These cheapo [filleting knives from Rapala](#) are beloved by fishermen. They have thin flexible blades with a dangerously sharp edge and a wicked sharp tip and soft handle. The 9-inch model costs less than \$30. It's great for separating ribs, slicing tomatoes, removing silverskin/membrane on meat, boning, slicing the ribs and seeds out of hot peppers, and, of course, filleting. It is not strong enough for cutting through bone, but there is nothing better for cutting meat *off* the bone. When it is dirty, it goes in the dishwasher. When it's

dull, we sharpen it. When we can't get it as sharp as new, we get a new one.



A RIB HOLDER

If you are hosting Fourth of July and have a crowd coming and limited grill space, a [wire rib holder like this one](#) for less than \$20 can handle five slabs. Just beware, because the slabs are close together airflow and smoke-flow are hampered, so cooking time can be significantly longer.



18-INCH WIDE HEAVY DUTY ALUMINUM FOIL

Essential if you opt for the Texas crutch. We prefer it to butcher paper because it is easier to get a good seal.



A LOUNGE CHAIR

Once you settle into a [La Fuma lounge chair](#) or one of its imitators, you will not want to get up.



A SIX-PACK OF BEER

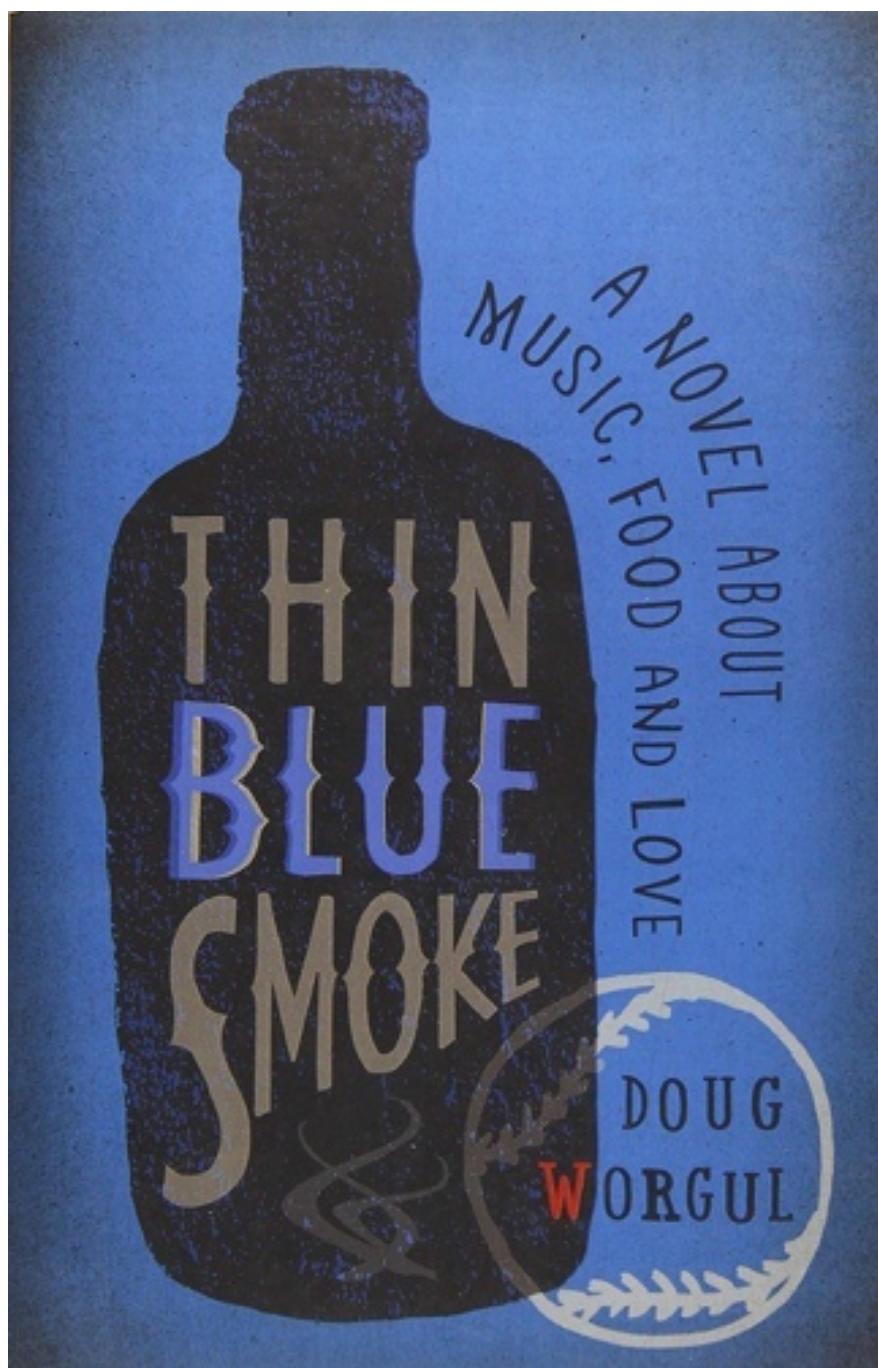
For the cook, not the meat.



A GOOD BOOK

A darn good read, [Thin Blue Smoke: A Novel About Music, Food, And Love by Doug Worgul](#) is well worth your attention. And not just because it has barbecue at its core. *Thin Blue Smoke* comes to life with some fascinating characters whose stories intersect with those of the main character, LaVerne Williams, a former major league baseball player who has an attitude, a rap sheet, and a Kansas City barbecue joint called “Smoke Meat.” The writer, Doug Worgul, has a day job as marketing director for one of the nation’s best barbecue joints, Joe’s Kansas City Bar-B-Que in KC, so this storyteller knows the turf. In Worgul's hands, the travails of a small-

time black restaurateur in the barbecue capital of the world ring true. Of course, Worgul's tale also weaves in music, whiskey, religion, profanity, love, lies, and laughter.



TUNES

Start with the great Louis Armstrong's "Struttin With Some Barbecue" (it's not really about barbecue, [click here to read the backstory](#)). To get you in the groove, we have a playlist of our favorite [food tunes](#).



PART VI
THE MEATHEAD METHOD

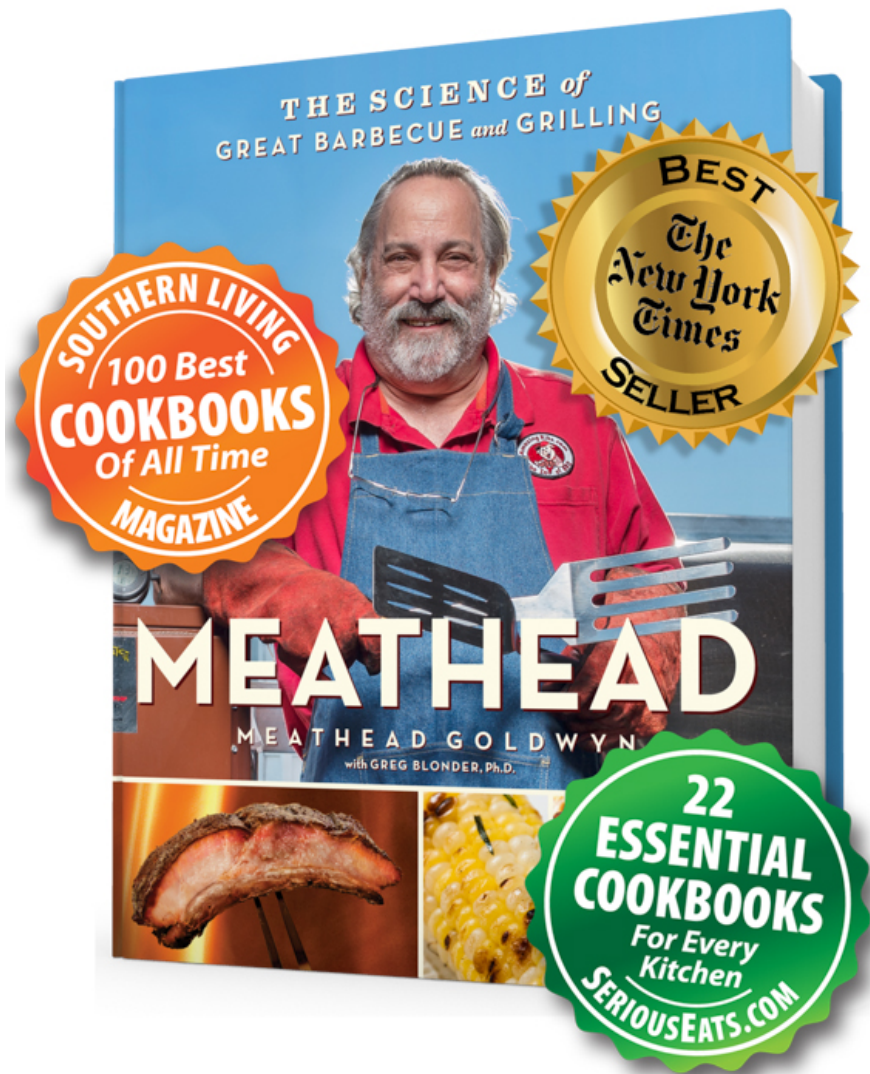


“Always remember, cooking for others is an act of love, and the most important part of the meal is not what's on the plate, but who's in the chairs.”

— *MEATHEAD*

Just what the heck is the Meathead Method?

It is the melding of science and art to create deliciousness and to nourish the soul as well as the body. It is a suite of science-based techniques that form the toolbox with which you can elevate your cooking, and hopefully gain creative inspiration.



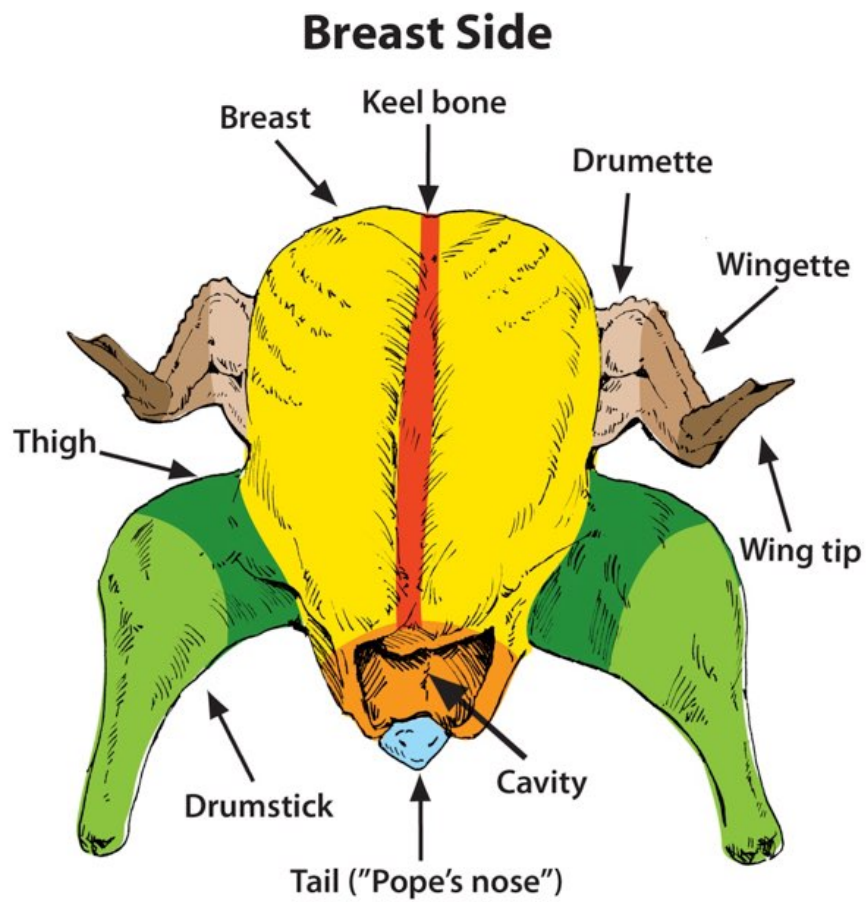
I am honored that my hardbound book, *Meathead, The Science Of Great Barbecue And Grilling*, made a lot of best cookbook lists including “The 100 Best Cookbooks of All Time” by Southern Living and that many cooks now employ my concepts. The reason for the accolades is simple, for years I have been questioning conventional wisdom and testing what I call “Old Husbands’ Tales.” When the lessons I have learned are woven together they comprise a comprehensive philosophy and approach to culinary arts

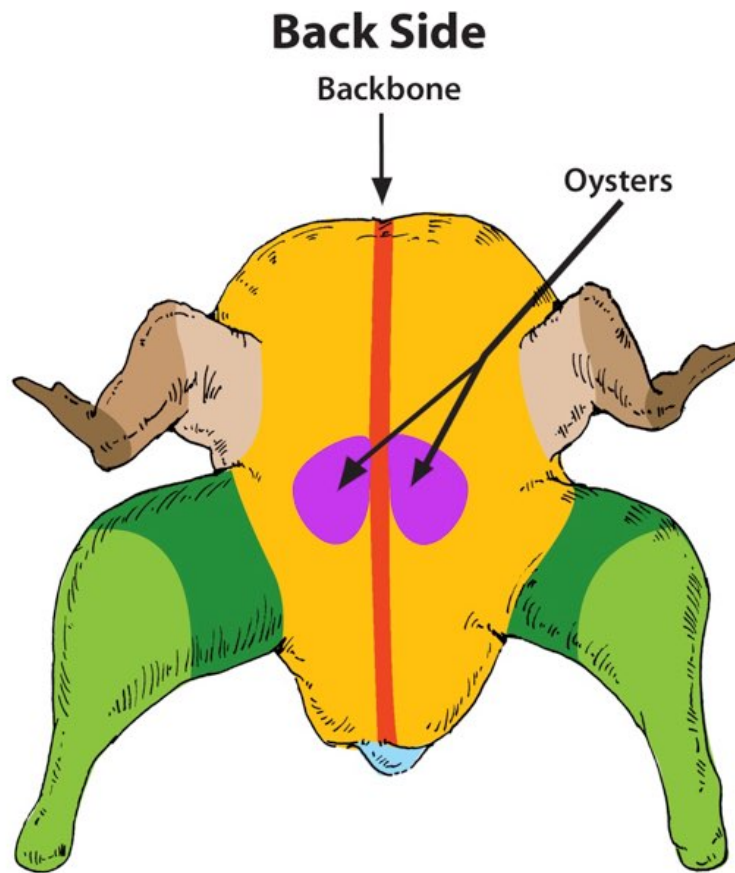
that have form The Meathead Method. I believe the Meathead Method can change your life like it changed mine.

I have written about the Meathead Method on Meathead's AmazingRibs.com, but the web is not the best learning environment. A morsel of info here, click, jump, a snack there, click, jump a crumb next. A book, or in this case, two books, with a beginning, middle, and end is a far better way to get the big picture.

I am currently writing my next hardbound book not surprisingly named *The Meathead Method, Barbecue Science Meets Culinary Art*. I am very pleased with its progress. Be sure to [subscribe to my email newsletter](#) to hear about it when it is published.

ABOUT THE BIRD





As with chicken, modern American turkeys have been bred to have large breast lobes because most Americans prefer white meat. They have also been bred to grow quickly. According to Penn State University, females (hens) will go from hatching (a *poult*) to 14 to 20 pounds (live weight) in 12 to 14 weeks. Males (toms) can reach 35 to 42 pounds in 16 to 19 weeks. An immature male is a *jake*, an immature female is a *jenny*. Some people believe hens are slightly more tender than toms, but because most turkeys are slaughtered when young, there is no noticeable

difference according to taste tests by *Cook's Illustrated* magazine.

We know you wanted to ask: The flap of skin on top of the beak is a snood, the flap under the beak is the wattle, and the gizzard can contain stones to help the turkey with digestion.

The vast majority of turkeys are grown in massive barns. But there are still a number of farmers who grow both modern and so-called “heritage” breeds in pastures for sale to restaurants, in farmer’s markets, and online.

WHITE MEAT VS. DARK MEAT



Meat is made from muscles and muscles burn fat and oxygen as fuel. A protein called myoglobin transports oxygen for release during exertion, and in general the more work a muscle does, the more oxygen-laden myoglobin and fat it needs. Myoglobin makes the muscle darker in color and richer in flavor. It also tints the juices pink.

White meat, breasts and wings, are muscles that don't work hard because domestic turkeys can't fly more than a few feet, especially in the typical confinement barn. Besides there is nowhere for them to fly. Breasts are known as fast-twitch muscles designed for brief bursts of energy and, because they don't need much energy, they don't have much fat or myoglobin. Because they are so low in fat they are notoriously dry when cooked to the safe temperature recommended by the US Department of Agriculture (USDA), 165°F. That's a bit too high for us. But more on this later.

Dark meat, i.e. thighs and drumsticks (together called legs), are slow-twitch muscles designed for steady movement and

endurance. Dark meat contains more fat, more myoglobin, and more iron. For this reason, dark meat tends to be more juicy and more flavorful. It is also more forgiving when cooked, remaining juicy even at 170 to 175°F or more. For these reasons most chefs prefer dark meat.

According to the USDA Nutrient Data Laboratory, here's the amount of calories, fat, and protein in a 100 gram portion of a young hen (about 3 1/2-ounces, roughly the size and thickness of a new deck of cards).

Meat Type	Calories	Total Fat	Protein
Breast with skin	194	8 grams	29 grams
Breast w/o skin	161	4 grams	30 grams
Wing w/skin	238	13 grams	27 grams
Leg w/skin	213	11 grams	28 grams
Dark meat w/skin	232	13 grams	27 grams
Dark meat w/o skin	192	8 grams	28 grams
Skin only	482	44 grams	19 grams

A boneless turkey breast is at most 7% fat. Lean cuts of beef tend to be 10% fat. Ground beef is typically 20% fat. A lack of fat is one of the reasons turkey can taste dry.

The reason you fall asleep after Thanksgiving dinner is not because of tryptophan, an essential amino acid in the turkey. According to research, the ratio of tryptophan to food in turkey is about the same as in a pork chop, lamb chop, chicken, salmon, and beef.. You fall asleep because you are exhausted from cooking, cleaning, in-laws, chasing kids, stuffing your face, drinking, and watching the poor pitiful Detroit Lions.

The old saw that turkeys are so stupid that they will look up in a rainstorm and drown is also a myth. They can, however, be drowned in gravy.

COMMON DOMESTIC TURKEYS



This is a New World bird—Europeans came late to the party. The main varieties of turkeys raised domestically are thought to descend from a bird, *Meleagris gallopavo*, raised in central Mexico almost 2,000 years ago. It was then exported to Europe by the Spanish in the 16th century. The name “turkey” came about as a mistake relating to a totally different breed of poultry imported to Europe from the country of Turkey. Most European languages get closer to the true Latin name: In Spanish, turkey is “pavo,” while “gallo” means rooster in Italian.



Industrial farming that promotes rapid growth and huge, oversized breast meat has made turkey a cheap source of protein. The most common turkey raised commercially is the “Broad Breasted White,” emphasizing what turkey farmers have been striving for forever.

WILD TURKEYS



Female wild turkey courtesy [Judy Gallagher](#)

Wild turkeys are the same breed as commercially raised birds, i.e. *Meleagris gallopavo*, but they look drastically different, sporting dark feathers instead of the white feathers prized by commercial turkey farmers for cosmetic purposes. Another difference: Wild turkeys can actually fly, at least for short distances, unlike their

unwieldy domestic cousins. And, as any hunter can tell you, they can run fast, too.

They are omnivorous, love to scrounge in corn fields, and hunters who bag and prepare wild turkeys find a vast range of flavors and toughness of the meat, depending on the diet and activity of that particular bird. The wild turkey has long been a significant source of celebratory and sustainable protein for Native Americans, both the eggs and meat.

Then there is the Bourbon named Wild Turkey made in Kentucky from a lot of corn.

HERITAGE BREEDS



Heritage turkeys are breeds of domestic birds that retain characteristics largely bred out of modern turkeys like the Broad Breasted White. These breeds can thrive in conditions that more closely resemble the good ole days of the pilgrims and pioneers. They can range freely instead of being cooped up in crowded conditions, and they grow more slowly so they come to market older, making them more expensive.

Heritage turkeys are closer to wild turkeys with flatter breasts, darker dark meat, and a slightly different flavor. The skin is thicker and tougher. Sometimes the meat is tougher. Since the breasts are smaller, they do not take as long to cook.

A few heritage breeds to look for: Bourbon Red, Narragansett, Standard Bronze, Royal Palm, Midget White, Blue Slate, and Black Spanish. Consult your butcher for advice on local birds or order from the excellent folks at [D'Artagnan](#) or other online specialists.

But beware. The term “heritage” is not government-regulated and there is nothing to stop unscrupulous merchants from labeling any old turkey as “heritage.”

About 25,000 are sold each year compared to more than 200 million Broad Breasted Whites. Try one before you serve it to the gang on Turkey Day.

BEN FRANKLIN AND “THE NATIONAL BIRD:” THE TRUE STORY



It is often said that Benjamin Franklin (1706–1790) preferred the turkey to the eagle as our national bird, but it is not clear whether he was serious.

The notion comes **from a letter he wrote to his daughter, Sarah Franklin Bache** (1768–1807), on January 26, 1784, two years after the eagle was named the national bird. In the letter he is critical of the eagle's habits and the artwork depicting it, perhaps mocking the fact that it took six years for Congress to choose a national bird. It sounds to us as if Franklin, known for his wit, was exercising it well:

“For my own part I wish the Bald Eagle had not been chosen the Representative of our Country. He is a Bird of bad moral character. He does not get his Living honestly. You may have seen him perch'd on some dead Tree near the River, where, too lazy to fish for himself, he watches the Labour of the Fishing Hawk; and when that diligent Bird has at length taken a Fish, and is bearing it to his Nest for the Support of his Mate

and young Ones, the Bald Eagle pursues him and takes it from him.

“With all this Injustice, he is never in good Case but like those among Men who live by Sharping & Robbing he is generally poor and often very lousy. Besides he is a rank Coward...

“I am, on this account, not displeas'd that the Figure is not known as a Bald Eagle, but looks more like a Turkey. For in truth, the Turkey is in comparison a much more respectable Bird, and withal a true original Native of America... He is besides, though a little vain & silly, a Bird of Courage, and would not hesitate to attack a Grenadier of the British Guards who should presume to invade his Farm Yard with a red Coat on.”

HOW BIG A BIRD DO YOU NEED?

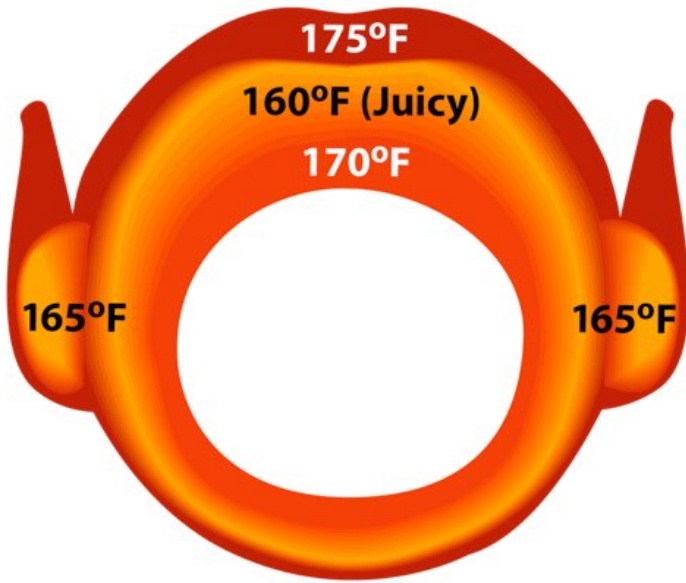
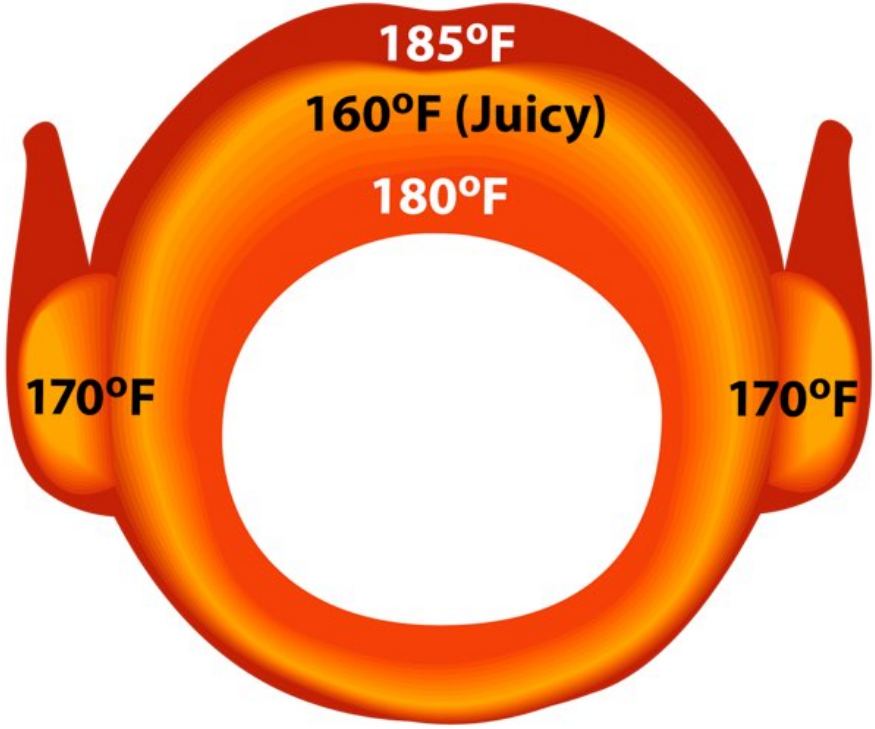


There are several variables to consider when deciding how much meat to buy. How many young children will there be? How many big eaters will there be? Are adult beverages in play? How many appetizers and snacks? What are the side dishes and how many? When does the football game start? Are your guests white meaters or dark meaters? And most important, do you want leftovers?

As a rule of thumb, one pound of raw turkey weight per person will usually be more than enough. When you subtract bones, giblets, and shrinkage, you will lose about 20%. That leaves about 3/4 pound of cooked turkey meat per person on average. We usually plan on 2 raw pounds per person so those who want leftovers (us!) can take some home (make sure you have plenty of aluminum foil or zipper bags on hand or tell guests to bring Tupperware. They love it!)

If you need a lot of turkey, and space permits, it is better to cook two small birds than one giant bird. Each will cook faster and be more tender and juicy. Here's why: The bigger the bird, the thicker the breasts and it takes longer to cook

the center of the breasts to proper doneness. By the time a big bird is done, thinner parts are overcooked, and the outer parts of the breasts are dry.



Cooking two smaller birds will take less time than one large bird and it will not take any longer time than a single smaller bird if you get the cooker up to the proper temp.

WHAT YOU NEED TO KNOW ABOUT TURKEYS BEFORE YOU GO SHOPPING



Today's grocery store turkeys are the result of decades of selective breeding. The Broad Breasted White used by Butterball, Perdue, Smithfield, Jennie-O, and most other major brands has been bred smaller to fit modern family sizes, with larger breasts to satisfy the demand for white meat, with a metabolism that lets them grow to market size rapidly, and with all white feathers because dark feathers make black spots on the skin. This breed accounts for 99% of all turkeys on the market.

Young Turkey. If you see this label, the bird may be either sex and less than 8 months old.

Fryer-Roaster Turkey. This is an immature turkey about 3 months old of either sex.

PRE-SALTED BIRDS



Because most people don't own a quality digital thermometer, and, as a result, they overcook their turkeys, most manufacturers inject a liquid brine into their turkeys. Salt is a great flavor amplifier if you don't overdo it. The injection of a brine adds liquid, helping to keep the meat moist. And remarkably, salt helps keep in the moisture. It seems the electrical charges in salt alter the structure of the proteins in the meat, a process called denaturing, and the denatured proteins become more hydrophilic, meaning they glom onto water and hold it tight. Salt also has antimicrobial properties.



Because processors are allowed to inject up to 8% of the weight of the bird with a 2% salt solution with other moisturizers, flavor enhancers, and tenderizers, this also adds to their profit. Let's do the math: If 8% of a 20-pound bird is injected brine, that's 1.6 pounds. If the bird sells for \$1.25 per pound on sale, that's \$2 for that salt water, even more when it is full price!

Turkeys that say “basted” or “self-basted” or “enhanced” have been injected with this salt solution. “Kosher” birds have been salted on the outside and inside the cavity because it was thought in ancient times that this would draw out the “unclean” blood.

Now catch this: If a bird has had salt and water injected, the law still allows it to be labeled “natural” or “organic” because salt and water are natural ingredients! In fact, the word natural has no legal meaning in the US and it is widely misused. Remember, this is a country where Congress once decided to classify ketchup as a vegetable!

But salt is not evil. It is an “essential nutrient” which means it is necessary for good health and you must ingest it because your body doesn't make it. Without salt, your brain and nervous system cannot function. That’s why all your bodily fluids are salty: Blood, tears, saliva, sweat, and semen. *Excessive* salt consumption can be hazardous, but not moderate consumption.

Let's do a little more math: An ounce of enhanced Butterball turkey (which has neither butter nor balls) contains about 65 mg sodium. So an 8 ounce portion of turkey, a pretty nice size serving, will contain 520 mg of salt. **The Cleveland Clinic recommends you keep your daily intake down to 2,000 mg if you are on a low sodium diet**, that serving of turkey is only one-quarter of the recommended daily amount of salt for someone whose doctor has told them to watch their salt intake. No sweat. Chow down!

Nowadays finding a bird that has not been salted is almost mission impossible. To get a bird that is not pumped, you need to special order it, go to a specialty store, or buy one directly from a farmer. Some butchers develop relationships with local farmers and will take orders for fresh birds. Another good source is a Community Supported Agriculture

(CSA) organization which you can find **through LocalHarvest.org.**

For more about salt and how important it is to your health, read this article on **the Science of Salt.**

LABEL CLAIMS



Now a word about birds labeled “free range.” This is yet another case of industry bullying the USDA into allowing a highly misleading term onto the label. The legal definition says “Producers must demonstrate to the Agency [USDA] that the poultry has been allowed access to the outside.” In practice, this means the producer can simply leave a door open to a small penned-in area. But the birds rarely go through the door into that scary sunny open area.

The term “pasture raised” has no legal definition either. And most important, the word “natural” on a label has absolutely no legal meaning at all. Marketers can call anything they want natural without any legal repercussions: How about a natural chocolate coated turkey beak? When we see the word “natural” we read it to mean “for suckers.” Suffice it to say, as with the word “natural” we see a marketing term with little quality or nutritional meaning other than “higher price.” And don't get us started on the word “organic.” So much of the word's original intent and meaning has been eroded.

FRESH OR FROZEN TURKEY?



“*F*resh” poultry means, according to the USDA, that the bird has not been taken below 26°F by the processor. At that point it is pretty hard (remember, freezing temp of water is 32°F), but not quite a bowling ball because of compounds in the liquids, not to mention the injected salt, prevent it from freezing completely. But ice crystals will still have formed. USDA inspectors allow up to 2°F tolerance when testing birds, so a “fresh” turkey can be held as low as 24°F, 8°F below freezing!

Ice crystals are larger than water molecules, and they are sharp. When ice crystals form, the water expands and the sharp edges punch holes in muscle fibers, allowing precious moisture to escape. That's the pink liquid in the bag. Called “purge,” it is mostly myoglobin. We won't waste it when we cook it. It will go in the gravy, but we would rather have it in the muscles where it belongs. To make matters worse, some grocers allow turkeys to thaw a bit so they *feel* fresh.

This phony “fresh” turkey business is bunk and the USDA is allowing marketers to deceive the public.

Sometimes you can buy truly fresh turkeys with no ice crystals and no purge from a farmer or specialty butcher who has chilled them to between 32°F and 38°F. You may be able to find truly fresh turkeys raised on farms, especially Amish-owned family farms. Amish farmers don't use electricity so their birds aren't processed on fast moving disassembly lines and the birds aren't up late surfing the net and doing things that get them overexcited. They're plucked and cleaned by hand and are largely free of pinfeathers.

To get a truly fresh turkey, usually you have to order it and the butcher or farmer will give you a pickup date. Get the feet. They are loaded with collagen and are a welcome addition to the gravy.

The problem with fresh birds is that, when an animal dies, the muscles can't get the blood laden oxygen they expect so they get stiff. **This *rigor mortis* usually sets in within an hour or so, and it doesn't go away until about 12 hours later, so you don't want to eat a fresh killed bird. Wait 24 hours.**



But fresh meat doesn't stay fresh forever. Buy a truly fresh turkey only if you are certain it has been killed within a week of the date you will consume it.

A thought: In an efficient slaughterhouse operation, turkeys are flash frozen in extreme cold. This process forms smaller ice crystals and that helps prevent purge. We would rather have a bird that was flash frozen right after slaughter than a so-called “fresh” bird that has been sitting around in the fridge for a couple of weeks at 26°F.

Bottom line: Proper cooking is far more important than having a fresh bird.

THAWING TURKEY



To thaw a frozen turkey, place the bird, still in its plastic shipping bag, in a large roasting pan in the refrigerator. You need the pan because the bags often leak. Allow 24 hours in the fridge for every 4 pounds. If you don't want to do the math, just put it in the fridge 7 days before the day you will eat it. That's a bit more time than needed, but hey, when you want to catch a train, you get to the station before the train, right? Most turkey disasters we hear about are because the bird has not defrosted properly. There are faster ways to defrost a bird [discussed in our article on thawing](#).

A day before cooking, strip off the plastic bag and remove the organs and neck from both the front and rear cavities. That's the deep center and the last part to thaw, so removing them will help ensure that the interior isn't still frozen. Just leave the neck and giblets in the pan. We'll use them later.

COOKING A FROZEN BIRD IN AN EMERGENCY



*A*s much as it pains us to tell you, in an emergency, *you can cook a frozen turkey*, but expect the exterior to be overcooked by the time the center is cooked to a safe temp. Make sure you have gravy.

Here are the rules for cooking a frozen bird:

1. Never deep fry a frozen bird
2. You absolutely positively must use a good quality meat thermometer for this maneuver.
3. You cannot stuff the bird.
4. You may have to cook for an hour before you can remove the giblet package and neck, but you really should get them out as quickly as possible, especially if they are in plastic, which can melt.
5. Cook at a lower temperature, 250 to 275°F, to make sure the skin and exterior don't dry out in the process.
6. Cooking time will be 1.5 to 2.0 times as long.

SALTING, WET BRINING, DRY BRINING, AND INJECTING



If your bird has not been salted at the factory, you will want to do it yourself because salt is the magic rock. It can penetrate deep, and as we discussed, improve moisture retention and amplify flavor without altering it. But keep in mind, not all salt is equal. Some have very small grains and others very large grains. Small grain salts are more concentrated because in a given volume, say a tablespoon, there is less air between grains than in large jagged grains. *We have standardized all our recipes on Morton Coarse Kosher Salt. If you use table salt, use half as much as our recipes specify.* For more on this and a conversion table for all major salt types, read this article on the [**Science of Salt**](#). There is an interactive calculator there.

There are three good methods for salting: Wet brining, dry brining, and injecting. Most of the time we prefer dry brining.

Wet brining involves submerging the meat in salty liquid. A typical wet brine contains salt, water, apple juice, herbs, and spices. Salt gets in, but the other ingredients are wasted

because most of their molecules are too large to penetrate the skin or the meat which can't absorb any more water anyway. They just settle on the surface. If you want to flavor the surface, you can have more impact with a good rub.



Wet brining means the bird must be kept chilled, occupying lots of fridge space, or it must be kept in a beer cooler that must be checked regularly to make sure it is still cold. Tests show that very little water from the brine enters the bird, at most increasing weight by 6%, and because it is not bound to the fibers, most of it drips out during cooking. Finally, the swim in the brine softens the skin and doesn't help you get it dry and crispy. Click here to read more about the science of [wet brining](#).

Dry brining is a better way to get the benefits of salt without the fuss and waste. *The night before, just sprinkle the skin with salt, about 1/2 teaspoon of Morton Coarse Kosher Salt per pound or less, but only if the turkey has not been injected or koshered before you bought it.* Moisture in the skin dissolves the salt and it travels into the skin and the meat. This also helps the skin crisp during cooking because it breaks down the structure of the skin and dries it out. Don't cover the bird with plastic wrap. We want the skin to dry out a bit. This will help you get skin as crisp as potato chips. Click here to learn more [about dry brining](#).



Injecting is a sure-fire way to get the salt down deep. By injecting, you don't have to worry about oversalting, you can do it at the last minute, you have less waste, less cost, no huge containers are necessary, no refrigeration space problems, and the biggest safety issue is making sure you don't stab yourself. To inject, you need a special hypodermic syringe for food. For more on the subject and for Meathead's poultry brine injection read his article [on The Science of Injecting](#).

In recent years we have hit upon the perfect, ahem, solution. Rather than diluting the meat with water by injecting it with a brine, we dry brine and then inject it with oil. Read on:

BUTTERBALLING THE MEAT



The deep-frying crowd likes to inject their meat with Cajun spices, but we're not fans. We think they are too strong and overpower the flavor of the turkey. And we like the flavor of turkey. Our biggest concern with turkey is keeping the breasts moist, and moisture comes in two forms, water and fat. We manage the water issue with dry brining, and not overcooking. Because modern turkey breasts have so little fat, we sometimes like to add richness and more moisture by injecting oil. Here's how you can butterball your own turkey (incidentally, Butterball never did inject butter):

You can inject melted butter but as soon as it hits the cold meat it clumps and clogs the needle. So wait until the meat is warmer than the melting point of butter which is about 90°F and inject then, *during the cook*. And yes, you can both dry brine and butterball the bird. Injecting forces fat in, and it squeezes into the spaces between the muscle fibers, not into the fibers. Salt, however, gets into the fibers. You only need to inject the breasts because dark meat rarely needs it.

Because the meat is about 75% water, it will not absorb much butter: Oil and water don't mix. The exact amount of butter depends on the size of the bird. Melt one stick of butter (about half a cup) and see how far you get. Inject about every 1/2 inch. [Click here for more info on injecting.](#) If there is any melted butter left, discard it. It has been contaminated, so do not put it back in the fridge.

HANDLE RAW TURKEY LIKE KRYPTONITE



Treat all raw fowl with great care. There is a good chance that it has *Salmonella*, *Campylobacter*, or some other pathogenic bacteria on it. Research shows that about two thirds of modern poultry has been contaminated by the time you get it home. That's just a fact of life nowadays. But don't worry. Cooking kills bacteria. *If you cook poultry properly, you are perfectly safe.*

How do so many birds get so yucky? Pathogens are everywhere. They are in the soil and in the air. Even “free range,” “pasture raised,” and “organic” birds are easily contaminated because they scratch and peck in dirt and grass that is teeming with bacteria, and because they eat insects, worms, larvae, seeds, etc. They often step in each other's poop and they peck in it. You can't prevent it unless you put them in diapers and hazmat suits.

Most turkeys are grown by “independent” farmers who work under contract to big brand marketers like Perdue. They are highly competitive because they know that we shop for bargains, so they use efficient, inexpensive, mass production

farming methods. These concentrated animal feeding operations (CAFOs), sometimes called factory farms, are designed to deliver low priced big breasted birds grown to market size much faster than nature intended. Birds are then processed in slaughterhouses and high-speed disassembly lines. During the process, poop can get on their skin, on the knives and gloves of the workers, on the conveyor belts, and in the water baths that are used to remove feathers and rinse the meat. It is practically impossible to prevent contamination, and it happens on small organic farms, too.

So you must handle raw poultry like kryptonite. Thoroughly wash your hands, tools, counter tops, cutting boards, sink, platters, tongs, and anything that contacts uncooked poultry.

The best solution, pun intended, is to buy an empty spray bottle at the drug store and fill it with a dilute solution of water and household bleach. Bleach is a powerful sanitizer. That's why they put it in swimming pools. *USDA recommends a solution of one tablespoon of good old fashioned 5% unscented, liquid chlorine bleach per gallon of water.* Store the bleach solution in the bottle, tightly sealed, and use it often. It will remain potent for months.

Vinegar, acids, and other compounds do not work. We don't care what you read. Ask any microbiologist. We have.

After washing your cutting board, knives, meat grinder, counters, and sink, thoroughly wet their surfaces with the bleach solution and allow it to stand for several minutes. Rinse with clear water and air dry or pat dry with clean paper

towels that can be discarded. Cloth towels are germ carriers.
Click here to read more [**about food safety.**](#)

USE HERBS AND SPICES



Our **“Simon & Garfunkel Rub”** recipe is parsley, sage, rosemary, thyme (sing along now), and a few other things. Our bottled **“Meathead’s Amazing Tuscan Herb Seasoning and Dry Brine”** is also herb based. They are both perfect for turkey and chicken. First lightly coat the bird with oil to help the rub stick. The oil also helps make the skin

crispy and boosts flavor because it is good at conducting heat. **Optional:** Push some rub *under* the skin. In the picture below you can see that I placed fresh sage leaves under the skin.

DON'T STUFF IT

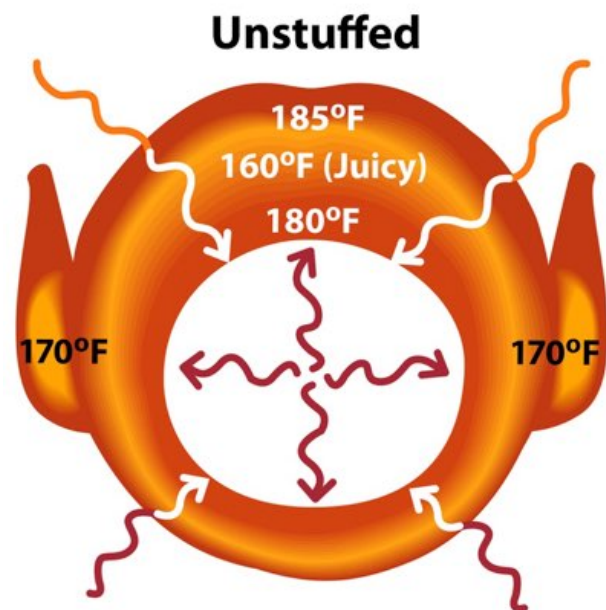
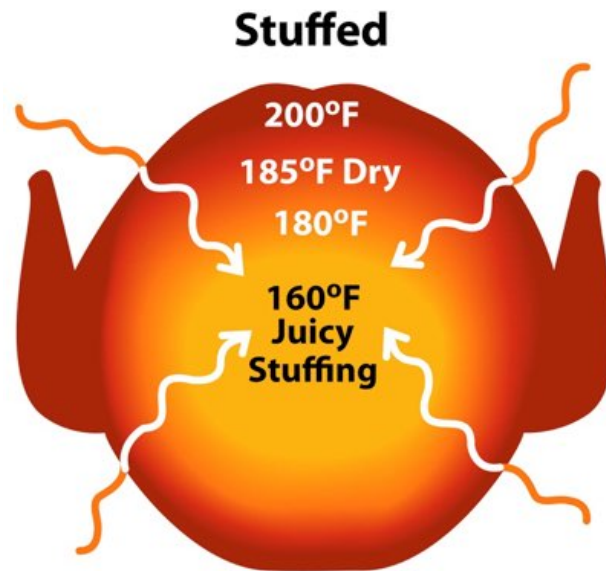


Many people think it is written in the Constitution that you must serve a whole bird crammed full of stuffing like the famous Norman Rockwell painting “Freedom From Want” below.



Don't do it!

If you are making a bread stuffing (and if you're having us over, you *must* have bread stuffing) please do not stuff it in the cavity. Cook it as a side dish. Some people insist on calling it *dressing* if it is not stuffed in the bird.



1. If you stuff the bird, the temp in the center of the stuffing must be at least 160°F to be safe because juices from the bird get into the stuffing. By the time the heat penetrates that far, the breast will be overcooked and void of moisture.
2. An empty cavity allows heat and smoke and flavor to enter the meat from the inside as well as the outside.
3. If you don't stuff you can put herbs in the cavity to amp up the flavor. Stuffing does little for flavor.
4. Stuffing sticks to the ribs of the turkey. If you use the carcass to make stock the next day, which you absolutely should do, the bread in the stuffing will make the stock unappetizingly cloudy and the gluten will make it thick.
5. If you cook stuffing outside the bird, you can spread it in a baking pan and get more crispy brown bits on the surface. Those are the bits everybody wants.
6. Now here's an outside the bird concept: Mix a little egg into the stuffing and cook it in well buttered muffin pans so each individual “muffing” will brown all around making lots more crunchy bits! **The recipe is later** in this book.

If you absolutely positively must have the stuffing in the cavity, then make it very moist, heat the stuffing up to 160°F before inserting it, and stuff the bird with hot stuffing. Then the meat won't overcook while waiting for the stuffing to heat up. But you still must get the center of the stuffing back up to 160°F before you take it off the heat because juices from the bird will get into the stuffing.

Don't put anything in the cavity like an onion or orange. It only blocks airflow and has zero impact on flavor. You want flavor? Sprinkle the cavity with a rub, preferably heavy on herbs. We don't care what you've read, there are not enough aromatics in an onion to equal the impact of onion powder. Not even close.

DON'T TRUSS THE LEGS



A lot of cookbooks tell you to truss (tie together) the drumsticks. Don't do it. Leaving them open will help the thighs and drumsticks cook faster because they will be surrounded by hot air. This is good because they need to be cooked to a higher temperature than the breasts, about 170°F. This also lets the entire surface brown, even the crotch, because nobody wants to eat rubbery skin.

SPATCHCOCK IT



Burgers and steaks are easy to cook. They are flat on top and bottom, solid in the center, and pretty uniform in thickness. This allows heat to enter the meat evenly and steadily. But whole birds are fleshy tubes, hollow inside, and they have thick parts (breasts), medium thick parts (thighs and drumsticks), and thin parts (wings). They also have all sorts of bones, some thick (leg bones), and some very thin (rib bones). Then there is the skin, whose chemistry is significantly different than the flesh, and it is all on one side.

A good solution is to spatchcock the bird. This is a giggle-inducing word for cutting it from tail to neck so you can open the bird up, flatten it, and brown the skin side as well as the cavity side. It also is just plain fun to say “spatchcock.” But if you want you can call it butterflying. There are numerous advantages to spatchcocking.



1) When you open up the bird by removing the backbone and lay it flat, you can brown the cavity. Brown is beautiful. It has more flavor than the pale unappetizing cavity of a whole Norman Rockwell bird. Browning is a well-known process called **the Maillard reaction**. Spatchcocking also allows you to season and brown both sides evenly.

2) Because hot air circulates on all sides, a spatchcocked bird cooks faster and loses less moisture, and when it comes to turkey breasts, moisture is critical. Because heat enters the meat from two sides the top side doesn't dry out as much.

On a day when the air temp was 65°F we cooked a spatchcocked 18 pounder in less than 90 minutes on a Weber Kettle at about 325°F. Your cooking time will depend a lot on

the outdoor air temp, the thickness of the breasts, and the unique characteristics of your grill or smoker.

3) A spatchcocked bird fits better on a grill with a low lid. It is perfect for Weber Kettles, as shown above.

4) Carving is a lot easier. The thighs come off with one easy cut. No fumbling around looking for the joint. The breasts are also easier to remove.

5) It looks pretty cool too!



Begin by trimming off loose flaps of skin from both the front and rear cavities. Toss the skin in a large roasting pan in which you will make the gravy.

Lay the bird on a cutting board or in a pan breasts down, backbone up. You can remove the backbone with a knife, but a sturdy pair of **kitchen shears** works best. Here's how (and

yes, I know this is a chicken not a turkey, but the technique is the same).

“To succeed in life, you need three things: a wishbone, a backbone and a funny bone.”

— REBA MCENTIRE



Don't hug the spine when you cut, the bones are thicker there and tougher to cut through. Cut at least 1/2-inch from the spine. Scrape out the brown goop from the spine (kidneys), throw it out, and set the spine aside for making the gravy. We also like to snip off the wing tips because they are so thin that they burn easily. We toss them aside for the

gravy along with the neck, heart, and gizzard, but not the liver. Freeze the liver and when you get a lot, make a paté.

If you are lazy, you don't have to remove the backbone, just cut the ribs along one side of the backbone and spread open the carcass.

Spread open the rib cage, lay the bird skin side up on a cutting board, and press down hard with both hands on the neck hole to break the collarbone (wishbone) so the bird lies flatter.



If you want to keep the wishbone intact because you know it can bring you a winning lottery ticket, first place the chicken breast-side up with the neck cavity facing you. Work your

fingers under the skin at the neck and locate the position of the wishbone with your fingers. With a paring knife, make two shallow cuts in the breast just above each of the longer bones of the wishbone. Push your fingers firmly through the cuts and work them around the long bones to loosen each side, then make a small horizontal cut directly above the very top of the wishbone to free it. Work your fingers all the way around the whole wishbone and pull it out of the meat. You can dry it and snap it with your favorite kitchen helper to see who gets the good luck.

You now have a spatchcocked bird. [Here's a short video of the entire process.](#)

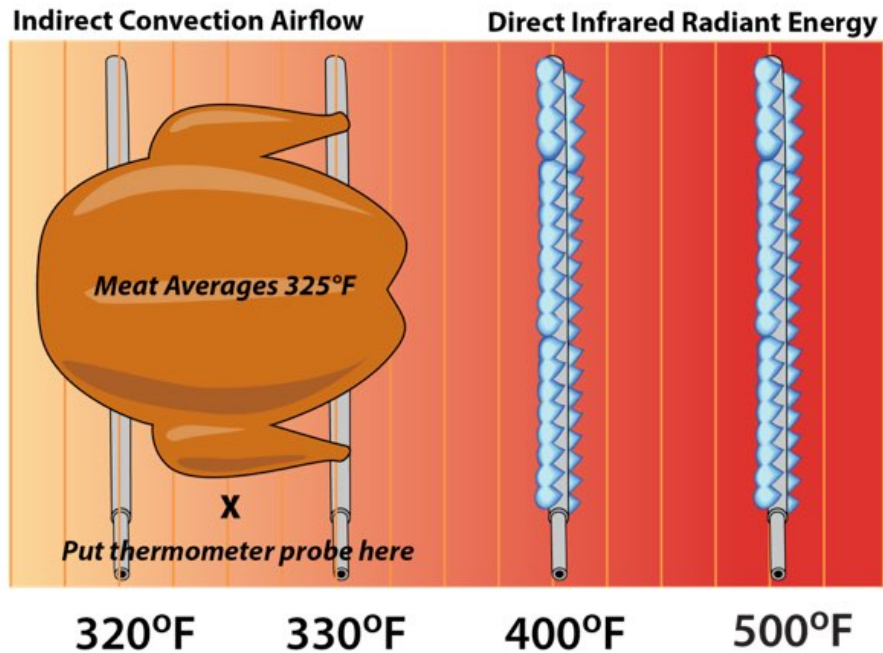
2-ZONE SETUP



Set up your grill in 2 zones and practice so you can hit two target temps: 225°F and 325°F in the indirect zone. Almost all our recipes call for one or the other and because most grills don't have thermostat control, *you* need to be the thermostat. If you haven't **[calibrated your system](#)**, click the link and practice long before you try to cook anything. For the internet's best buying guide to grills and smokers **[click here](#)**. For a great thermometer, **[check our database of reviews here](#)**. Remember, we don't sell any of them, we just test and review them.

You absolutely, positively do not want the bird sitting directly above the flame or coals unless you have always secretly wanted to run an avian crematorium. The meat and drip pan go in the indirect zone and roast by convection airflow circulating all around the bird rather than by direct infrared radiation from the flame or glowing coals. We do not recommend putting the meat and the drip pan in the center. It is too easy to burn the thighs and wings that way. Put the drip pan below the food grate. The bird roasts on the food grate above.

Here is how to set up a gas grill for 2-zone cooking:



Below is a 20 year old Weber Genesis gas grill. We have removed the cooking grates. The bird sits on a wire rack above the drip pan filled with the gravy fixins, and the drip pan sits right on the flame deflector bars. On the left is a disposable aluminum loaf pan with apple wood chips sitting on the hottest burner. We have covered the tips of the wings and drums with foil to keep them from burning (it is removed later). About 30 minutes before the bird is done we remove the drip pan to firm up the back of the bird and put the finishing touches on the gravy. Lately we've been reversing the procedure and starting to cook without the foil, then when the wings and drums get dark, we cover them. **The process is described in detail in the Ultimate Turkey.**

[recipe](#) below. Either method works. [Click here to see this gas grill setup](#) up close and personal.

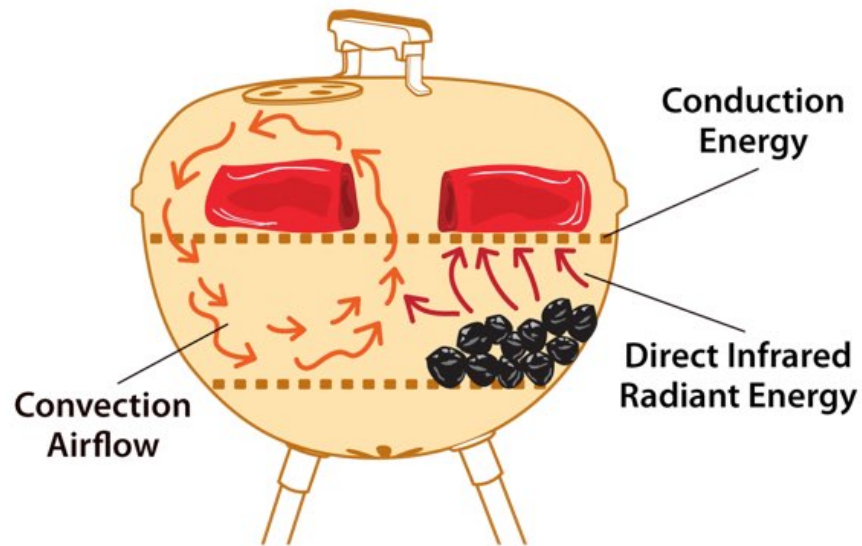


If none of these works for you, try to raise the bird up by placing it on an oven rack sitting on top of several *empty* tall beer cans (don't write to us if you don't know how to empty them). If they are clean, they can sit right in the drip pan.

Beware! A disposable aluminum pan will not hold the rack and a bird without collapsing (don't ask how we know this), so if you use a disposable pan, it must go under the grill grate and the bird must go on top of the grill grate. That, or you must rest a cooking grate on empty beer cans.

Here is how to set up a charcoal grill for 2 zone cooking:

Convection vs Conduction vs Radiant Energy



Regardless of your grill type, go easy on the wood. With charcoal, you will not need much wood, a small handful of chips or a single chunk at most (maybe 4 to 8 ounces). Too much smoke is ruinous. We know you want to put the pedal to the metal but resist the temptation.

SETTING UP YOUR SMOKER



The only thing you need to do different than normal is get the pan under the meat. Just make sure the drip pan does not dry out. Drippings evaporate rapidly. Check every 20 minutes or so. If you have two birds, try to offset them so one doesn't drip on the other.

- **Weber Smokey Mountain & other “bullet” smoker setup.** If you are using a bullet shaped water smoker like a Weber Smokey Mountain, try leaving the water pan dry and put the gravy in a pan on the lower grate. That should do it. You can use the built-in water pan for the gravy if you wish but only if it is really clean. If the water pan is dirty, line it with foil or put a pan inside it. You may have trouble hitting 325°F this way, though. In order to get it up to 325°F, depending on the outside air temp, you'll probably have to add more fully lit coals than normal and leave the vents open all the way. See these [articles on the Weber Smokey Mountain](#).
- **Kamado or Egg setup.** You do not want direct heat and only the oval shaped Primo can be set up in two zones, so you need to put in the deflector plate. The gravy pan can go on this plate.
- **Gas smoker setup.** Put the turkey on a shelf high up in the cabinet and the gravy pan on the bottom shelf. You won't need the built-in water pan. You'll probably need to set the dial on high.
- **Offset barrel smoker setup.** Put the drip pan on the bottom of the cooking chamber under the cooking grate. [See our article on the best setup for an offset smoker](#).
- **Pellet smoker setup.** Put the drip pan on top of the big deflector plate under the cooking grate and put the bird on the cooking grate. If you have a pellet smoker that generates its best smoke at about 200°F or so, start there for about 30 minutes, and then crank it up to 325°F.

- **Electric smoker setup.** You might not be able to get up to 325°F and it will be very humid in there. That's good for juiciness and tenderness, but bad for the skin. So take it up to about 145°F internal temp, and then put it in a 400°F oven to crisp the skin. You can also put it on a hot grill or under the broiler. Then ask for a charcoal, gas, or pellet smoker for your birthday. Click the link to see why.

SETTING UP YOUR INDOOR OVEN



*I*f you're snowed in, you can make many of these recipes indoors very easily. Just omit the wood. Don't even think about using wood indoors. You'll never get the smell out of the place and you'll be sleeping on the couch for weeks. Here's a picture by a reader, Matt Johnson, showing how he did it. Turkey on an upper rack, disposable drip pan with the gravy fixins sitting in a sheet pan to catch stray drips right below. You can also line the bottom shelf with foil if you don't have a sheet pan big enough.

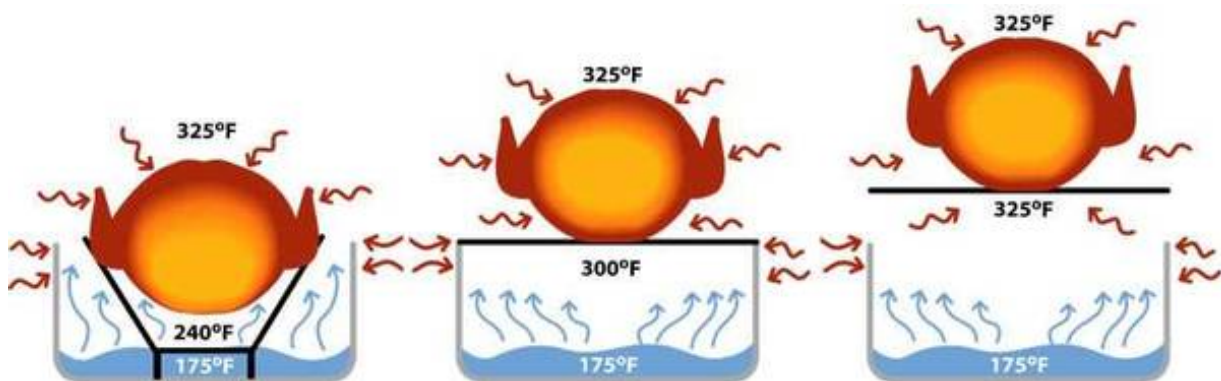


Photo courtesy of Matt Johnson

GET THE BIRD ABOVE THE PAN



The traditional turkey roasting configuration is a V-shaped rack that sits in a deep roasting pan with water in the pan to keep the drippings from burning as shown in the left of the illustration below. It is a recipe for undercooked dark meat and skin on the bottom and sides as pale as a Seattle sunbather. We can see you nodding in recognition.



Roasting pans block airflow from the sides and the underside of the bird. That's why the underside of your bird is tan and soggy. Instead, *place the turkey above a roasting pan so air can*

flow all around it, cooking and browning it properly on the underside.

You need a grate for holding the bird *above the pan*. You can use one from your grill, or even one from your indoor oven.

The tricky part is arranging everything. Because there are so many different grill designs, we can't go through all the options, so grasp the science and adapt it to your own rig. The ideal setup is to place the bird on a rack 2 to 3 inches above the pan, so heat and smoke can travel between them. If the bird is any lower, the mass of the cooler gravy, evaporation from its surface, and the sides of the pan will conspire to block heat, airflow, and smoke and you will end up with a pale, rubbery, undercooked bottom.

Another advantage of placing the drip/gravy pan underneath: It acts as a heat sink, absorbing energy and moderating temperature fluctuations. If you have a small grill, the water pan can actually sit between the flame and the meat, casting a heat shadow so the meat doesn't overheat.

BUILD THE GRAVY BENEATH THE BIRD



On a grill or smoker, putting the drip pan under the grate is perfect. Put all the fixins for the gravy in the drip pan and the result will blow you away.

Put the skin trimmings, the backbone, the neck, the wing tips, the heart, and gizzard in there (but not the liver). Pour all the juices from the bag in. Toss in an apple chopped into four pieces, an onion chopped into four pieces, a stalk of celery including leaves chopped into four pieces, two tablespoons each of dried sage and thyme, two carrots chopped into four pieces, a whole bottle of dry white wine, and enough water to cover everything. The smoky drippings will add to the flavors and you will have an awesome turkey stock for gravy and if any is left over it makes a killer soup.

Check the drip pan while you're cooking to make sure it does not dry out and burn. Add water if necessary.



Let the gravy remain thin yet potent so it can infiltrate between the muscle fibers rather than sit on top like a lump. Hot thin gravy will also warm the meat if it has cooled off during carving. **More on this later.**

If you must make Granny's thick flour-based gravy, **the recipe is later**. If you start with my gravy it will be the best Granny ever tasted.

DON'T COOK BREASTS DOWN



Some people like to cook breast side down because they think fat and juices will percolate down and keep the breast moist. Juices simply can't travel very far through muscle fibers that confine them. Especially since the fibers in the breasts run horizontally, not top to bottom. And they are not straws. They are sealed on the ends. And the breast is not an empty jug waiting for juices to flow in. The breast meat is already saturated with fluid. When you sleep on your stomach, your breasts don't swell do they? And if the juices could flow, pressure would push them up, away from the heat, like the liquid in a glass thermometer.



And where would these juices come from? Visualize an upside down turkey. The breast is maybe 3 inches thick at most. What is directly above it? The cavity! No juices there!

If you turn your bird upside down because you want fat to baste the breasts, alas, breasts have little fat. It's in the skin, which would be below the breasts if the bird was upside down, so melting fat would just drip out, not bathe the meat.

Finally, if you cook breast down, you smush the breasts and put marks on the skin, and if you put the bird in a roasting pan, the skin will probably not brown properly. Ugly.

ADD WOOD, BUT NOT TOO MUCH



Turkey loves smoke. Nobody has ever ruined a turkey by undersmoking it, but many birds and reputations have been ruined by too much smoke. Smoke is a seasoning like salt. It is part of the orchestra of flavors, not a drum solo. Show restraint. Experiment on a weeknight, not on Thanksgiving. Suppress your testosterone. On a charcoal grill or smoker use a single chunk or a handful of chips or pellets. Just 4 to 8 ounces. On a gas grill, because it has so much ventilation, perhaps a cup.

DON'T BASTE



*T*ests prove that basting does not make the meat juicier. But it can slow cooking by cooling the meat and it can make the skin soft. You will still get a beautiful crisp brown skin without basting.

COOKING PIECES



*A*nother option: Cut the bird into quarters or smaller pieces so you can cook the thick breast, the thinner legs, and the even thinner wings each to optimum temps.

We know this is radical and might give Aunt Matilda conniptions, but it guarantees moister meat, more delicious brown surfaces, and cooks much faster (that's why it is moister).

ROTISSERIE COOKING



*R*otisseries are a good way to cook meat because the process of rotating it between hot and cool zones retains juices and insures even cooking, *but we don't recommend them for turkey.*

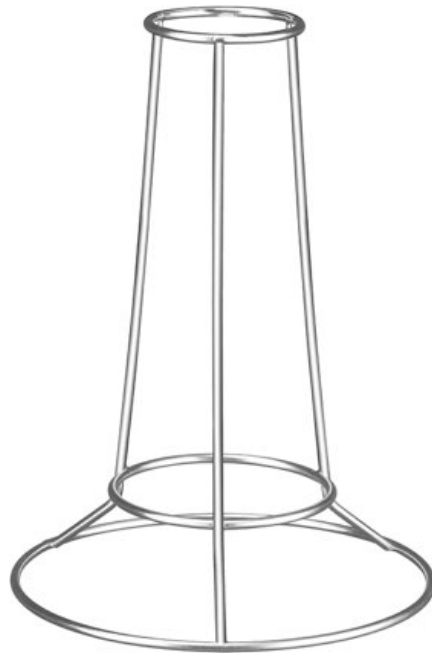
The problem is that you need to truss the bird up tight on a spit or else the wings and drums go flopping around and get burned. If you truss your bird, the skin beneath the wings, thighs, and drums never darkens and stays rubbery. And because the thigh is pressed tightly against the side, it takes too long to warm and cook through, so by the time it hits ideal temp, about 170°F, the breast is overcooked. That's why we recommend cooking turkey untrussed.

In addition, it is difficult to balance the bird on the spit. If it is imbalanced it puts serious strain on the motor.

Replacement motors are usually north of \$100. Some rotisseries come with counterweights to balance the load. That is a good thing.

Finally, the bird can rip loose of its moorings, and then you have torn breasts. We say fuhgeddaboutit.

VERTICAL ROASTERS WORK



*I*f you must serve a whole bird Norman Rockwell style and if your cooker is tall enough (**most eggs, kamados, and ceramic grills** are) try roasting the bird vertically.

The advantage of a vertical roaster is that you get much better airflow up into the cavity than when the bird is reclining and that means better smoke penetration from the

inside as well as more even and faster cooking. Just make sure the tail sits about 3 inches above the drip pan for proper airflow. The device you want is a thick wire armature that supports the bird like [the Spanek Vertical Roaster \(shown above\)](#).



Don't put a beer can or a turkey “cannon” up your bird's butt because the metal blocks airflow to the cavity and impedes heat and smoke. And no, the liquid in the can will not add moisture to the meat. Beer can chicken and turkey does not work the way people think. [Click here to read the science explaining why beer can chicken and turkey are bad ideas.](#)

CLOSE SMOKING



*A*nother technique we are fond of is called “close smoking” and it is perfect for thin, fast cooking foods like fish filets, or food that has been sous vided. We use a device called GrillGrates™. It has raised rails and sunken valleys, and we toss wood pellets, wood chips, or sawdust into the valleys and they create smoke just 1/2 inch below the meat, rapidly imparting smoke flavor and color.



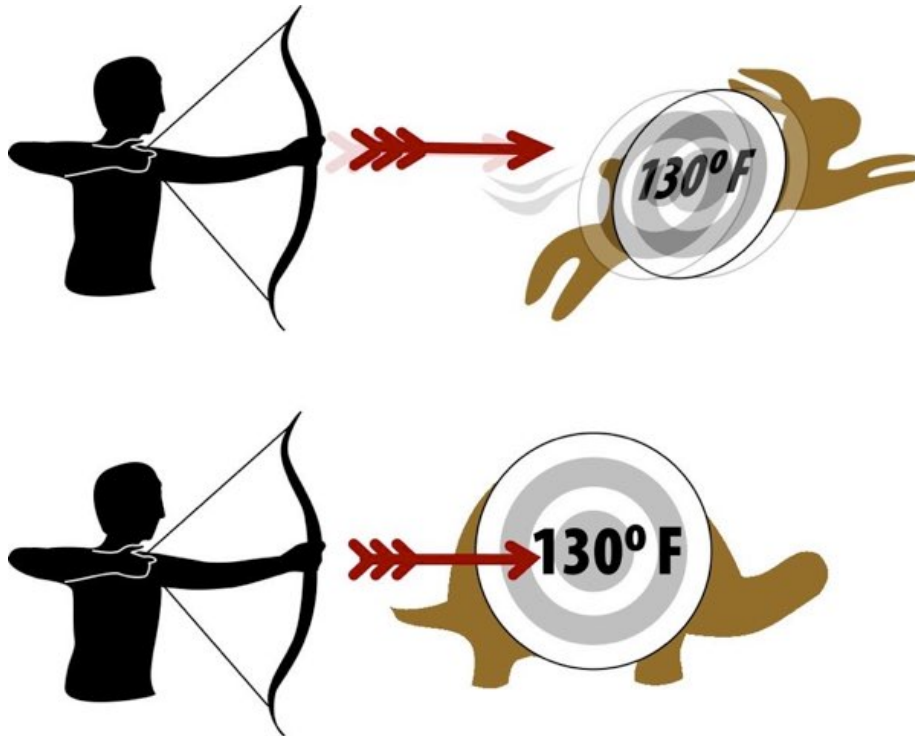
After sous vide, the breasts above went from ugly and colorless to golden and luscious in about 5 minutes with this technique. [Here's a video that describes the method in more detail.](#)

COOKING AND DONENESS TEMPERATURES



When cooking turkey or chicken on a grill or smoker, in general, you want to cook skinless parts at 225°F in indirect convection air. This low temperature helps hold in moisture and the slower cooking makes it easier for you to get it off the heat at the right temperature. For skin-on birds, you can roast in the indirect convection zone at 325 to 350°F in order to render the fat under the skin and make the skin crispy.

Meat doneness is a moving target, and it is much easier to hit your target temperature when cooking at a lower temperature like 225°F, and low temps keep meat tender and moist.



To hit the target temperature you have to remove the bird from the heat when it is 5 to 10°F below target because cooking can continue for 20 minutes or so after you remove the bird from the heat. This “carryover” cooking can take a perfectly juicy chicken or turkey breast and turn it into cardboard.

Here's how carryover works: Energy cooks the outside of the food. Then the outside of the food cooks the inside of the food by **conduction**. When we remove the meat from the heat, it continues to cook because some of the heat built up in the outer layers of the meat continues to be passed towards the center while some of it bleeds off into the atmosphere.

So it's best to remove the bird at 155°F in the breast and 160 to 165°F in the thighs to allow for 5°F carry-over. It will be

safe. And juicier.

How long does this take? Actual cooking time will vary depending on how well the meat is defrosted, whether or not you brined or injected, what temperature your fridge is, if it sat at room temperature for a while, how close your bird is to the gravy pan, how well your cooker holds steady temps, the quality and accuracy of your thermometers, airflow within the cooker, humidity in the cooker, and the breast size of your bird. That's a lot of variables! We'll give you estimates in our recipes, but remember, *cook with a thermometer, not a watch.*

DON'T OVERHEAT, DON'T OVERCOOK



We recommend you cook most poultry at 325°F. Regular readers know that we love low and slow, and many of our recipes recommend cooking at 225°F. That's a great temperature for gently melting tough collagen-based connective tissues without getting their protein panties in a bunch and squeezing out moisture (see this article on [meat science](#)).

But turkey doesn't have the same composition as pork ribs or beef brisket, so we don't need to worry about melting a lot of tough collagens. Turkey can handle higher temps, and higher temps are needed to render the fats in the skin in order to crisp it. The higher temp helps brown the skin in the short cooking time allotted.

We want brown skin because when cooking, brown means deep rich, complex taste. Browning is the result of a process called [the Maillard reaction](#) and, although it starts at low temps, it really kicks in at about 310°F when amino acids and sugars form scores of scrumptious new compounds. This

chemical reaction is responsible for the rich flavors in toasted bread, coffee beans, and dark beer.

At 325°F you can render more fat from the skin and get the skin crispier. Nothing worse than soggy wet flabby rubbery skin, and that's what you get at low temps. Also, at lower temps, it is possible the bird will stall at about 150°F internal temp. **The stall is a phenomenon** that occurs when evaporation from the meat cools it so that the temp doesn't rise until the surface dries out. If you stall while cooking a turkey, after chewing the meat you will need new dentures the next day.

On the other hand, we don't want to cook turkey too hot. Recently we have been seeing more and more recipes for cooking turkey at high temps, like 500°F. This just risks incinerating the skin and flies in the face of physics. High temps are fine for thin cuts like 3/4 inch steaks because we want the exterior dark with the interior at 130°F, much lower than turkey. But turkey breasts are much thicker than most steaks and we need to allow enough time for the heat to travel to the center. At high temps, by the time the heat penetrates, the exterior and outer layers are overcooked and dry.

Besides, at higher temps the window of opportunity opens and closes too quickly. The amount of time at which the meat is properly cooked in the center is short, and in short order it is overdone. By cooking at a lower temp we have a better chance of removing it at the perfect temp. Fastballs are harder to hit than slow pitches.

So 325°F is a nice compromise. High enough to benefit from the Maillard reaction on the skin and melt some of the fat, hot enough to gelatinize connective tissues, but not flamethrower hot, not risking a badly overheated meat exterior before the center is cooked.

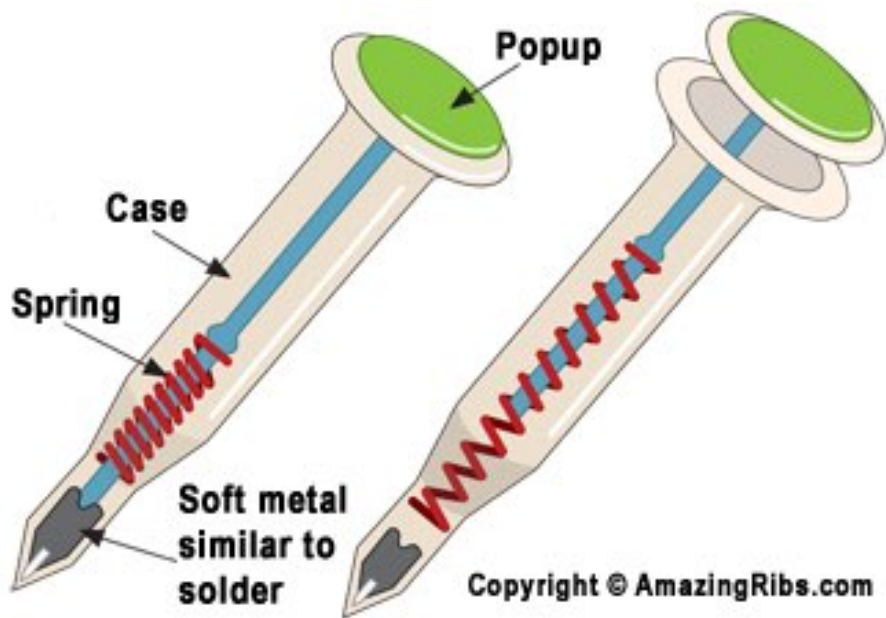
If you have a smoker or grill that doesn't get to 325°F (some smokers won't, especially most gasers and electrics), you will need to cook longer. Don't sweat it. The skin should still be brown because the Maillard reaction can still take place at lower temps, but at a much slower pace. Besides, the smoke is going to darken things, too. But you may not get really crispy skin. If the skin isn't crisp by the time the meat hits 150°F, put it in an indoor oven or on a grill at 350 to 400°F.

PLEASE USE DIGITAL THERMOMETERS



Turkey is unforgiving and your guests are unforgetting. Undercook, and turkey is slimy, and after dinner everyone is praying to the porcelain god. Proper meat temperature is a health and safety issue.

Overcook, and you have attic insulation. The most important thing to do when cooking turkey is to hit the target temps on the money. Good news: It's easy with the right tools.



You cannot trust the popup thermometer that comes inserted in the bird. The plunger that pops up is anchored in metal that is supposed to melt at a set temp, often at 185°F. At that temp a turkey breast is more particle board than party. That 20°F difference is the difference between succulent and sucky.

In November 2013 **Consumer Reports tested popup thermometers** and wrote that “three timers popped up when meat was still below that safe zone, one as low as 139.5°F. These low readings are a concern... Serving undercooked turkey means you risk sending your guests home with a nasty case of food poisoning. Our food safety experts recommend that cooks do not rely on these timers to tell whether their holiday bird is done.”

Worse still, if you stuff your bird, it is not measuring the temp of the stuffing which is several inches further away from the heat than the tip of the popup.

What about that dial thermometer you have in the junk drawer? Take a look at the calendar. This is the digital age. Bi-metal dial thermometers were invented in the 1800s, and all but the most expensive models can most charitably be called “indicators,” not precision measuring instruments.

Cooking without a good digital thermometer is like driving without a speedometer, flying without an altimeter, building furniture without a tape measure, filling your tires without a pressure gauge, or repairing the reactor without a Geiger counter.

Digital thermometers are inexpensive, fast, and accurate. They will pay for themselves in one steak dinner or one trip to the doctor.

Likewise, you simply cannot trust the cheap bi-metal dial thermometer that the manufacturer installed in your grill or smoker, such as those shown below.



Grill manufacturers compete to undercut each other's prices, so they are not about to install a high-end thermometer, especially when most of their grills are used for hot dogs and burgers. They buy bargain basement. Even the top brands use cheapo thermometers. Look at the picture above. Some of those are very good cookers. But their thermometers are not.

Dial grill thermometers are not only inaccurate, they are also mounted in the lid, way above the cooking surface. Well, the temp in the dome can be a lot different than the temp at the grate. The grate is much closer to the heat source and the dome is closer to the ambient air. If you are cooking on Thanksgiving Day north of the Mason-Dixon Line, that air temp is *cold*.

And from left to right, the probe is in the middle, so if you are using two zones, it is giving you an average. Not very helpful.

Either indoors or outdoors, we use two thermometers when we cook, a handheld instant read thermometer and a remote read thermometer with more than one probe. *The key to turkey success is to avoid overcooking or undercooking it even the slightest bit.* And yes, you can poke it many times and it will not dry out. It is 75% water, so a 20 pounder is 15 pounds of water. A few drops escaping through thermometer pokes will not make your bird dry. *Proper temp is far more important.*

AmazingRibs.com has an electrical engineer tricked out with special lab equipment that precisely measures the speed and accuracy of thermometers. He is also an accomplished cook.

The database of more than 200 thermometer reviews he maintains on AmazingRibs.com is without peer.

For turkey, it is important to use a digital probe that can be inserted and left in the deepest part of the breast. It is also important to place a probe just above the cooking surface near the bird so it feels the same temp as the bird. Both probes are attached to cables that run from the probes to the outside of the grill so we can monitor the temperature of both the meat and the oven at any time without opening the lid. There are several models available with as many as 6 probes and some are Bluetooth and Wifi connected.

SERVING TEMPERATURE



Confusion abounds over the proper temperature to which you must heat turkey for safety and for maximum tenderness and juiciness. One of the problems is that the USDA changed the recommended minimum temperature for cooked poultry in 2006. Until then the USDA said we should cook white meat to 160°F and dark meat to 180°F, and if you were cooking a whole bird, take it *all* up to 180°F. The new USDA recommendation is 165°F for any and all parts of turkey and chicken. That means cookbooks published in 2006 or earlier are wrong. Worse, many celebrity cooks seem never to have gotten the word and it is common to hear them tell us to desiccate our birds by overcooking them to 180°F.

We say: Remove the turkey from the heat when the breasts hit 155°F. It will continue to rise to 160 to 165°F. At that temp it is perfectly safe. Any more and you will have cardboard.

Click here for a [complete guide to the proper cooking temps for all meats, both USDA and restaurant chef recommendations.](#)

Recommended cooking temp	325°F (163°C)
USDA recommended serving temp	165°F (74°C)
Remove from heat when all parts hit	155°F (68°C)
Ideal serving temp for white meat	160°F (71°C)
Ideal serving temp for dark meat	170°F (77°C)
Pop-up thermometers pop at	185°F (85°C)

PLAN FOR CARRYOVER COOKING



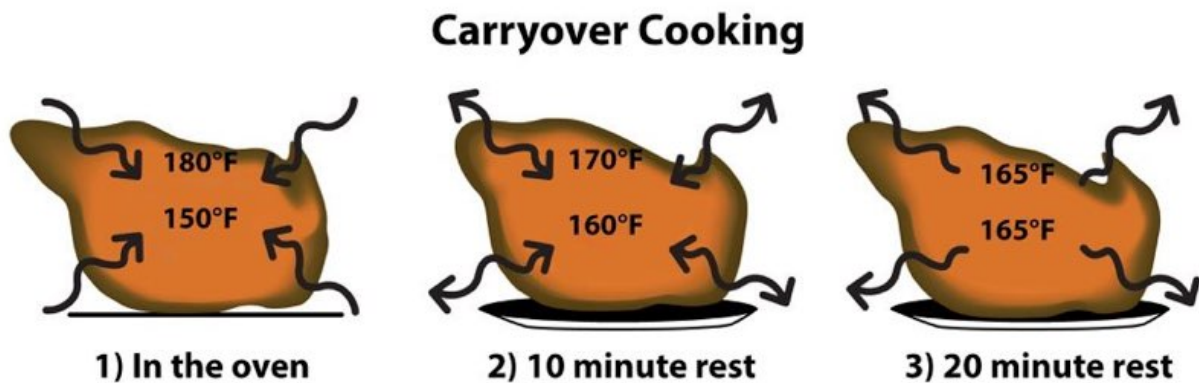
The USDA doesn't factor in carryover either. Carryover is simple physics. Here's how it works: In a 325°F oven, the surface of the meat will slowly warm. This warming is the process of exciting the molecules so they move faster. It takes time because the meat is a combination of water, fat, and protein, and they are good insulators.

As the surface warms it conducts its heat slowly inward to the cooler cells beneath, passing it along like a bucket brigade. Excited molecules get their neighbors excited by bouncing off them like billiard balls. Slowly the heat marches towards the center.

As the exterior passes the heat along, it loses heat, so the bucket brigade prevents the surface from zooming up to 325°F. Also, moisture on the surface evaporates, cooling the surface in the same way sweat cools you off on a hot day. Not to mention that, because meat is mostly water, it can't get much above 212°F. If the meat is thin, the heat builds up rapidly. If it is thick, it takes much longer to get to the desired temp in the center. The trick is to get the center to

the target/safe temp without overcooking the exterior. One technique is to baste the exterior, but that keeps the skin wet and soft, and we want our skin dry and crisp. Another technique is to cook low and slow. We'll keep the temp at 325°F, which is medium, and we'll explain why later.

Interestingly, the meat keeps cooking after you take it out of the heat. The hot outer parts continue to pass their heat inward and in 15 to 30 minutes after coming out of the oven, the center of the muscle can rise another 5 to 10°F. Some heat also escapes into the air, so we don't want to leave the meat sitting around too long or it gets cold.



In the illustration above, on the left we have a piece of meat cooking at 325°F. It is absorbing heat from all sides, the outer surfaces are hottest, and the heat is passed to the center by conduction. In the center picture, the meat has been removed from the oven. Heat continues to be passed towards the center, even though it is sitting at room temp, and some of the heat is escaping into the surrounding air. On the right, the meat has come close to an even temp throughout and now it is cooling as more heat escapes.

To be absolutely safe and still have moist and tender whole birds, you should *serve* turkey at a minimum of 160°F measured in the deepest part of the meat and test it in multiple locations with a good digital thermometer.

DO NOT REST OR TENT WITH FOIL



*Y*ou'll need something to lift the hot turkey out of the cooker. You can buy specialized turkey lifters, but they are mono-taskers. Meathead uses his “Wolf Claws” or “**Bear Paws**” (shown here). They were designed for pulling pork, but they can do double duty as lifters and salad tossers. [Click here](#) for more info about these handy tools.

If you don't want another gadget in the kitchen, you can lift a turkey with two wooden spoons. Just stick the handle of each into the front and rear cavity.

Many recipes tell you to cover the bird with foil when you bring it in. Steam trapped under the foil softens the skin.

Resting to redistribute juices is a myth. This just allows the residual heat in the meat to overcook the bird. Take the bird off and start carving immediately.

Place the bird on a cutting board with channels that can hold the copious juices. Carve the bird and place the carved meat on a platter with a lip to contain the juices. Pour on some gravy. Take a bow and enjoy the applause.

TAKING YOUR BIRD OVER THE RIVER AND
THROUGH THE WOODS



Dinner is not always at our home, but friends constantly ask us to do a turkey. Rather than go there 4 hours before dinner and cook on a strange grill or smoker, we cook the bird at home, leave it whole, and scurry over the river and through the woods.

Put the bird on 30 to 60 minutes early, and when the probe says it is 160 to 165°F, put the bird into a faux Cambro to keep the bird warm until dinner time. A real Cambro is an insulated plastic storage box popular with caterers. A faux cambro is simply a good beer cooler.

The meat temp will rise about 5°F at first, and an hour later the temp will have dropped only about 5 to 10°F if you don't peek! Try not to let it drop below 150°F. If you have a good cooler, it should stay safe for up to 3 hours. This technique will soften the skin a bit, but that's better than going cold turkey. So get that cooler cleaned up before you start cooking. Use bleach to clean it.

If you wish, when you get there you can roll the bird around on a hot grill to crisp the skin.

We know you want to show off, but if dinner is more than 2 to 3 hours away, you need to cook the bird to 160°F, then chill the bird and re-heat it to 160°F when you get there so you don't send anyone to the hospital. This is called "serving leftovers for Thanksgiving dinner." And re-heating a cooked bird can take almost as much time as cooking it from scratch. Now why would you do that? The meat will be dry and you'll need a lot of our thin gravy to moisten it. You will not enhance your rep with reheated dry meat.

We strongly recommend you serve freshly cooked meat or let somebody else cook the bird. If you have to cook the bird and travel more than 2 hours, then get there early and cook it on site. Cook it fast **by spatchcocking** it.

HOW TO CARVE A TURKEY



“What is sauce for the goose may be sauce for the gander but is not necessarily sauce for the chicken, the duck, the turkey or the guinea hen.”

— ALICE B. TOKLAS

Step one: Close your eyes and repeat after us “I am smarter than a dead bird.”

Go ahead and parade the whole bird around the room and take a few bows, but do the carving in the kitchen, not on the dining table. You need elbow room, you don't need adoration or the heckling, and you certainly don't need to ruin the tablecloth.

The second thing to do is to reach for the best carving knife you own. Some folks prefer an electric knife, but we prefer poultry shears with a good chef's knife or fillet knife. Just make sure the knives are sharp or the skin will give you fits.

Poultry shears are the perfect tool for cutting the backbone out for spatchcocking. These spring loaded ones from **OXO**

Good Grips are our faves.



Meathead has fallen in love with Gunter Wilhelm knives and leans on his 8-inch chef's knife.



If you can't afford a first class German or Japanese blade, get a 7.5-inch Rapala fillet knife.



This cheapo blade has a thin, flexible, and dangerously sharp blade, a wicked sharp tip, and most models cost less than \$20. Designed for filleting fish, it is not for cutting through bone, but there is nothing better for cutting things off bones than its flexible blade.

When it's dirty, it goes in the dishwasher and you can't do that with the fancy knives. When it is dull you can hone it and when it no longer holds a razor edge, chuck it and get a new one.

You should also have a good honing steel. We know you've seen TV chefs hone knives by crossing the steel and knife in front of them and zip zop zip zop, they're done. Just remember that honers are not for sharpening. As you use a sharp knife, the edge can actually curl a bit. A **honing steel** can straighten it out. A honing steel is a rod that has a sandpaper like surface.

Don't try honing like the pros do it. It's not accurate and it's a good way to add your bodily fluids to the giblets. A better way is to place the tip of the steel on a table and hold it vertical, perpendicular to the table. Hold the knife by the handle firmly in your other hand. Rest the part of the knife closest to your hand against the top of the steel and tilt it to a 45° angle. Then roll your wrist so it is halfway between 45°

and the steel, about 22.5°. Draw the knife slowly towards your body gently sliding it downward towards the table at the same time. Hone the entire blade, right to the tip. Repeat the process on the other side of the blade. Hone each side alternatively about 3 or 4 times.

Good carving knives should be professionally sharpened every six months or so depending on how often you use them. You can do it yourself ([click here to see our recommendations among sharpening devices](#)) or you can take your knives (and lawn mower blade) to a pro.

When it comes to selecting a cutting board, we are partial to plastic because they can be cleaned and sanitized in the dishwasher and if they get gouged you can sand them smooth. This [double sided one from OXO](#) has grips so it doesn't slide around on the counter and gutters along the edges to capture juices. It is under \$20.



1) Before you carve, hone your steel (see description above).



2) **No need to rest the bird**, just start hacking away fresh from the cooker. You will need a cutting board with gutters to catch the ample juices, and a serving platter or two. Let's start with the dark meat. Take a paper towel and grab the top of a drumstick and bend it until the joint between it and the thigh is visible. Flex it back and forth until you have a good clear shot at the knee from behind. Sever the meat around the joint, and then cut between the ball and socket to remove the leg.



3) You can serve the drumstick whole for the cavemen like Meathead, or you can stand it on the meaty end and slice downward, removing the meat. We usually carve one and leave one whole.



4) Now pull out and discard those pieces of stiff tendon with your fingers. Repeat the process with the other leg.



5) Now hold the thigh and cut through the skin that connects it to the body. Bend the thigh back to find the hip joint. Cut through the ball joint to remove the thigh.



6) You can serve the thigh whole, but then the choicest pieces of dark meat go to only two guests. If you have more people who want thigh meat, you need to remove the bone so you can slice the meat. To do this, flip the thigh skin side down, and run the knife around the bone and under it until you can lift out the bone.



7) Now turn the thigh skin side up and cut it into slices across the grain. Repeat with the other thigh.



8) Now, grab a wing, bend it back to locate the shoulder joint and cut through the tendons holding together the ball and socket.



9) Now for the breast. The old fashioned method was to cut slices off the breast while they were still attached to the

carcass. There are several things wrong with this approach. First of all, it is awkward. It is hard to get even slices especially as your knife approaches the rib cage, which is curved. The process is even more awkward because the carcass is wobbly. Besides, it's not fair because the person who gets the first slice gets most of the skin! The old fashioned method has you cutting *with the grain*, and slices cut with the grain are always chewier than slices cut *across the grain*. The better plan is to remove each side of the breast from the carcass and then cut it into beautiful slices across the grain so it is more tender and so each piece includes some skin. Here's how: In the middle of the two lobes is the breast bone, sometimes called the keel bone. Cut down along one side of the breast bone with long strokes until the knife hits the rib cage.



10) Then tilt the knife and work along the rib cage with long strokes until the breast falls away in one football shaped

hunk. On the front the knife will slide along the wishbone. Don't forget to pull it out from under the skin flap!

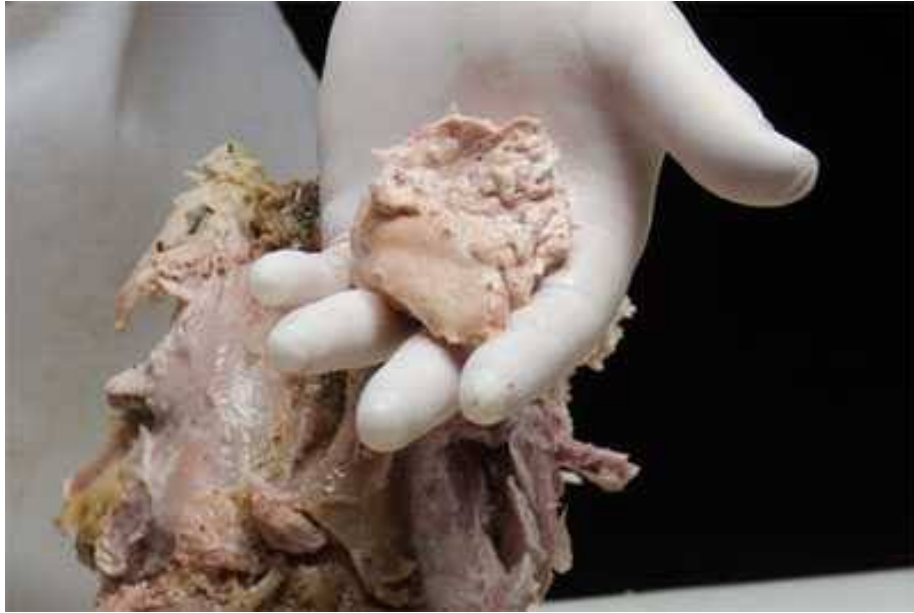


11) Lay each breast skin side up on a cutting board and slice it across the grain in slices at least $\frac{1}{4}$ -inch thick. We like thicker slices, especially if the meat is tender. But there is a trick to slicing it properly (we'll bet you're not surprised to hear that). Remember how we loosened the breast skin to put rub under it? It is no longer firmly attached to the meat. If we're not careful the skin will slip and slide around and you won't get neat slices with skin with each slice of meat. The trick is to have a really sharp knife. Place it on the center of the breast near its handle. Place the thumb and forefinger of your free hand on either side of the knife pressing down on the skin gently. In one gentle steady stroke, with slight downward pressure, draw the knife toward yourself across the skin, cutting down through it and into the meat. If you use a dull knife or a serrated knife, or if you use a sawing

motion, the skin will move around. This takes a bit of practice.



12) When you have the meat cut, re-assemble it into a breast shaped presentation in order to keep the meat warm. If you are careful, you can slide your knife under the assembly and lift the whole thing onto the serving platter. On second thought, play it safe and use a spatula.



13) Just before serving the bird, give yourself a reward. Flip the carcass over so the backbone is facing up. Run your fingers along the sides of the backbone and near the joints where the wings were attached, right under the shoulder blades, you'll find tender, juicy blobs of meat, each about the size and shape of the meat from a large oyster, hence the nickname, *turkey oysters*. You can pop them out with your fingers. Savor them for a job well done.



14) Now, if you made the superb thin, clear gravy in **The Ultimate Turkey** recipe, pour *a little* gravy over the top of the meat in the platter, enough to moisten it but not drown it.

WHY THANKSGIVING IS SPECIAL, AND FIGHTING
THE WAR ON THANKSGIVING



*F*inally, here is Meathead's rant on the importance of Thanksgiving, reprinted from the Chicago Tribune: **Fight Back Against The War On Thanksgiving.**

WINE FOR TURKEY





*T*urkey, gravy, stuffing, sweet potatoes, cranberry sauce, pumpkin pie. No other meal has such a pro forma menu. So what to serve in the glass?

When cooked properly, turkey can be tasty and moist. When overcooked, as it often is, the dry meat is neutral and unexciting. So we moisten it with gravy and cranberry sauce and surround it with sweet dishes to enliven it.

If the task of selecting the beverage to accompany the annual eat-in has fallen to you, remember that the side dishes usually have bolder flavors than the bird, so match the wine to the most flavorful parts of the meal. Also, remember that you are buying for everyone, not just yourself, and the fact that the average American does not like wine that is very dry.

What is needed is something quenching to wash down overcooked white meat, something with a hint of sweetness, so it will not taste bitter beside the sweet side dishes, something tart enough to cut their sweetness, and something friendly that everybody will love.

Below are our recommendations for different *types* of wines. Ask your wine merchant for specific recommendations. They will rarely steer you wrong because they want you back.

And about the picture above: That is Meathead, before he turned gray, when he was the wine critic for the *Washington Post* pouring an 1806 Lafite. At the time it was the most expensive wine ever sold, so he knows a bit about wine and food pairing. Check the lace on his cuffs.

WITH A HINT OF SWEETNESS

German Riesling Kabinett. German Riesling is light and fresh, and Kabinett is a grade of wine that is very slightly

sweet, but not too sweet. It can be floral, like a handful of fresh grapes. Our first choice.

Austrian Riesling, New York Riesling, and Washington State Riesling. Occasionally as good as the best German Rieslings, Austrian Rieslings are good value, and the best New Yorkers and Washingtonians, although not cheap, can be shockingly good.

Alsace Riesling. Similar to German Riesling but often a bit richer and more complex from aging in wood barrels.

Alsace Pinot Blanc. Refreshing, tart, complex, with just a hint of sweetness.

Alsace Pinot Gris and Oregon Pinot Gris. Light and tart. Steer away from California Pinot Gris. It is usually dull and boring.

French Rhone whites, American Viognier, American Roussanne, and American Marsanne. These are bigger wines, richer, complex, but rarely too sharp or harsh. Often reminiscent of tropical fruits.

DRIER WINES

If your guests are into wine and prefer them bone dry, and if your meal is more savory than sweet:

Sauvignon Blanc and Semillon. We love these wines, especially Sauvignon Blanc from New Zealand and white wines from Bordeaux, but they are usually bone dry, and so

are not great matches to all the sweet stuff. If your meal is mostly savory, and your guests are wine geeks, go this route.

Pinot Noir and French Burgundy. The best of these reds are expensive, but they can be lighter than Cabernet and Merlot, and more tart, making them great foils for rich savory foods.

Click here for some websites that are good sources of [specific wine recommendations.](#)

PART VII RECIPES



Now that you have the basics down, here are some of our favorite recipes. But first a few tips.

Tinkering. We know you like to tinker. *Do us and yourself a favor, try our recipes our way with no changes the first time.* You will then have a memory of what the recipe is *supposed* to taste like.

If the recipe calls for regular old fashioned granulated white sugar, don't use brown sugar. If it calls for boring old distilled white vinegar, don't reach for the cider vinegar. We worked very hard to perfect and test these recipes and some substitutions just don't work. After you've tasted the dish the way we intended it to taste, then the next time you make it, riff on it however you want.

Here are some key steps to creating a successful dish.

Timing. Prep times include all the washing, measuring, chopping, and peeling. Cooking times are our best

guesstimates based on our tests, but keep in mind, this is food, not a widget, and two seemingly identical chickens may cook at different rates. No two cookers are exactly alike. Weather, humidity, and wind also impact outdoor cooking times. [Click here to read more about what influences cooking time.](#)

Wood. We have not specified precisely how much wood you will need or what type of wood to use for smoking because the strength and flavor of wood depends on many variables, including the nature of your cooker and your preferences. Go easy at first. A meal is never ruined by too little smoke. Measure wood and keep records with a cooking diary ([you can download one here](#)).

2-zone almost everything. For most recipes on a grill, we recommend 2-zone cooking. *The indirect convection heat zone is for slow roasting and smoking.* It is cooler and acts as your safe zone for when pieces finish early or if they are cooking too fast. Whenever cooking over indirect heat, we always specify an air temperature, usually 225°F or 325°F. You need a good digital oven thermometer with a probe placed on the cooking surface near the food. A thermometer in the dome cannot be trusted.

Over the direct infrared radiant energy zone, we want lots of fire power for searing. “Give ‘er all she’s got, Scottie.” For searing, we usually do not specify the temperature because most cooking thermometers cannot go high enough and infrared radiant energy is best measured in calories rather than temperature. Moreover, the direct radiant heat side is usually only being used for searing and browning the

surface. The food isn't there for long. We sometimes call cooking by direct infrared radiant heat Warp 10, Warp 9, Warp 8, etc. in homage to Star Trek.

Lid position. Almost all the recipes in this book require you to cook, roast, bake, and smoke with indirect convection heat with the lid down. In most cases when we ask you to sear, the food is over direct infrared radiant heat, and the lid is up.

Some recipes call for cooking in a pan or pot. You can do that on the direct heat side or on your side burner, or, horrors, indoors. We strongly recommend that you have a frying pan and a sauce pan set aside just for outdoor cooking. You can cook with your best expensive pots and pans, but sometimes they fall, or get scorched, and we don't want to risk the wrath of a spouse by ruining a wedding gift.

Salt. We use Morton Coarse Kosher Salt. No Morton did not pay us. Different salts have different grain size and that can influence salinity when measured by volume (teaspoons, tablespoons, cups) rather than weight. We wanted to standardize on one salt, and the grain size of Morton Coarse Kosher Salt makes it easy to pinch and scatter. If you substitute table salt, cut the quantity in half since it is more concentrated. [Click here to learn more about the science of salt and see a conversion calculator for different salt types.](#)

Black pepper is always best when ground fresh. Ditto for other spices that start out as seeds.

Butter is usually unsalted in our recipes. We prefer to control the salt content precisely without the wild card of an unknown quantity coming from the butter. That said, if you

use salted butter, there is so little that the recipe will probably turn out fine, especially if you cut back a tad on other salt.

Eggs are large.

Flour is all-purpose flour.

Fruits and vegetables are medium size, and they should always be fresh and scrubbed with cool water.

Garlic powder is pure garlic powder, never garlic salt, which has salt in it. You should control salt separately.

Mayonnaise. Never substitute Miracle Whip or light mayonnaise for mayonnaise. The chemistry is very different. Among other things, Miracle Whip has two kinds of sugars, mayo has none.

Milk is whole milk. You can get away with 2% in many cases, but not skim milk, soy milk, almond milk or any other substitutes. If we call for half-and-half or cream, it is because we think the fat is important to the chemistry. You can probably substitute one for the other, but don't use milk.

Oil is usually olive oil unless otherwise noted and is usually extra-virgin olive oil if it is not being heated. If it is being heated, use inexpensive olive oil or vegetable oil.

Sugar is granulated white sugar. Sugar is a common ingredient in spice blends and sauces because it is a flavor enhancer, it helps browning, and it encourages crust formation. When we want brown sugar, we will call for it.

Ingredients are listed in the order in which the recipe calls for them. If you see the term “divided” it means that the ingredient will not be used all at once.

Mise en place. Always practice *mise en place* (i.e. putting everything in its place). Gather all your ingredients and chop, slice, and dice before you apply heat to anything. You don't want to be scrambling to chop an onion while things are cooking in the pan. This is a vital foundation level concept.

SIMON & GARFUNKEL RUB



*“Are you going to Scarborough Fair? Parsley, sage,
rosemary and thyme, Remember me to one who lives
there, She once was a true love of mine.”*

— SIMON & GARFUNKEL

*I*f you're a DIY kinda cook, here's the recipe on which Meathead's Amazing Tuscan Herb Poultry Seasoning and Dry Brine is based. Measuring the ingredients

is a bit tricky since some of the herb leaves may be powdered, not crushed. The big chunks, like oregano have more air in them, so try to compensate by adding more or less, depending on how much air is in your raw materials. If your measurements are not precise or if you lack one or two ingredients, no wars will break out, but we think the sage, bay leaf, and rosemary are essential. Crushed bay leaf may be hard to find so you can take about 10 whole bay leaves and crush them with a mortar and pestle, spice grinder, or blender. The pepper will add a little heat, but not much, but you can cut it out if you're a wimp or amp it up if you're a tough guy.

Makes. About $\frac{1}{4}$ cup, enough for about 2 turkeys

Takes. 10 minutes

- 2 tablespoons dried crushed sage
- 1 tablespoon dried crushed parsley
- 1 tablespoon dried crushed rosemary
- 1 tablespoon dried crushed thyme
- 1 tablespoon dried crushed oregano
- 1 tablespoon dried crushed basil
- 1 tablespoon dried crushed bay leaf
- 1 tablespoon ground black pepper
- 1 tablespoon sugar

Optional. If you want a capsaicin jolt, go for it. Start with $\frac{1}{2}$ teaspoon of chipotle powder.

Method

1| Prep. Measure everything and dump it into a blender. Put the lid on the blender (very important), and run it on medium for a few seconds, turn it off, and run it again. Continue pulsing until you have a powder. Dump the whole thing in a jar and label it.

2| How to use this stuff. If the food has not been brined, then sprinkle it with Morton Coarse Kosher Salt, $\frac{1}{2}$ teaspoon per pound (half as much if you use table salt). If it has been brined, then skip the salt. *Lightly* coat your bird with water, sprinkle on the rub liberally, even if you are a conservative. If time permits, let the seasoned meat sit in the fridge for an hour or three. Then grill, smoke, or roast.

KANSAS CITY CLASSIC BBQ SAUCE



Although there are several distinctly different regional styles of BBQ sauce in the US, the thick red stuff is what most of us reach for when our spouse says “pick up some barbecue sauce, willya?”

We usually find sweet red sauces too bold for turkey with one notable exception: Legs. I think it works with the dark meat and skin. **Check out this recipe below.**

Although we make **[a bottled KC-style sauce you can buy on AmazingRibs.com](#)**, if you are no longer living with your parents, you really should have a house sauce so that when your guests ask “what brand of sauce is that?” you can plunk a hand labeled bottle on the table. When they beg you for the recipe, you can then tell them “It's a secret” and mumble the old saw that ends in “and then I'd have to kill you.”

Although the original KC sauces were probably vinegary, hot, and not sweet, similar to **[Arthur Bryant's Original Barbeque Sauce](#)**, since the 1970s, the prototype has been KC Masterpiece -- tomato based, and sweet. The style has spread coast to coast and nowadays, when you say “barbecue

sauce”, **although there remain many regional and creative styles**, most people think of the KC style.

The best sauces have multiple sources of sweetness (brown sugar, molasses, honey, and onion -- which gets sweet when it is cooked); multiple sources of tartness (vinegar, lemon juice, hot sauce, and steak sauce); multiple sources of heat (American chili powder, black pepper, mustard, and hot sauce); and it gets layers of flavor from all the above as well as ketchup, Worcestershire, garlic, and salt. Most Kansas City sauces are brass bands with multiple layers of flavors, sweets, and heats. Because they are thick and tomatoey, they sit on top of the meat, not penetrating very far. For this reason you don't want to use too much. Just one or two layers, max. **Let the meat shine through. Don't drown it in sauce.**

That's the idea behind this recipe. It's not KC Masterpiece, but it *is* a KC Classic. Try this recipe and you'll never use the bottled stuff again.

Makes. 6 cups. Click here to calculate how much you need and for tips on **saucing strategies**.

Takes. 45 minutes even if you take a phone call.

Keeps. Because it has a high acid and sugar content, it can keep for months in the refrigerator.

- 2 tablespoons **American chili powder**
- 1 teaspoon ground black pepper
- 2 teaspoons **Morton Coarse Kosher Salt**
- 2 cups **ketchup**

- 1/2 cup yellow ballpark-style mustard
- 1/2 cup cider vinegar
- 1/3 cup Worcestershire sauce
- 1/4 cup lemon juice
- 1/4 cup steak sauce
- 1/4 cup dark molasses
- 1/4 to 3/4 cup honey (see below)
- 1 teaspoon hot sauce
- 1 cup dark brown sugar (you can use light brown sugar if that's all you have)
- 3 tablespoons vegetable oil
- 1 medium onion, finely chopped
- 4 medium cloves of garlic

Optional. If you are cooking indoors, or if your meat does not have a lot of smoke flavor, or if you just want more smoke flavor, you can add 1/3 cup of liquid smoke to this recipe.

About the vinegar. We like our sauce tart. Trust us, although it may taste tart from the bottle, it is perfect on meat. If you are not big on vinegar, cut it in half.

About the honey. The recipe above is to our taste but we have found that many people like it better if we add another 1/2 cup of honey for a total of 3/4 cups.

About the steak sauce. There are many different brands and they all have different flavor profiles, but what we want here is the meaty depth of savor that they call umami, so use whatever you have on hand.

About the hot sauce. A simple sauce like Tabasco is all you need. We like the chipotle flavored version.

About the oil. You may use butter or bacon fat for a bit more flavor, but keep in mind, they can get rancid with time, and they will likely shorten shelf life to about 1 week. Use a bottled vegetable oil and it can keep months.

Secret optional ingredient. Add 2 tablespoons of tamarind paste. This exotic ingredient isn't really that exotic. It has a sweet citrusy flavor and really amps up a sauce. If you can't find it in an Indian or Asian grocery, **it is available from Amazon.**

Method

1| Mix the American chili powder, black pepper, and salt in a small bowl. In a large bowl, mix the ketchup, mustard, vinegar, Worcestershire, lemon juice, steak sauce, molasses, honey, hot sauce, and brown sugar. Mix them, but you don't have to mix thoroughly.

2| Warm the oil in a large saucepan over medium heat. Add the onions and sauté until limp and translucent, about 5 minutes. Add the dry spices, crush the garlic and add it, and stir for about 2 minutes to extract their oil-soluble flavors. Add the wet ingredients. Simmer over medium heat for 15 minutes with the lid off to thicken it a bit.

3| Taste and adjust. Add more of anything that you want a little bit at a time. It may taste vinegary at first, but that will be less obvious when you use it on meat. We recommend you run with our recipe the first time and then you can make it

your own. Strain it if you don't want the chunks of onion and garlic. We like leaving them in, they give the sauce a home-made texture. You can use it immediately, but we think it's better when aged overnight. You can store it in clean bottles in the refrigerator for a month or three.

When it comes to applying sauce, bristle brushes are really hard to clean and can harbor pathogenic bacteria. Throw them out and get **a good silicone sauce brush** like the one below. They are easy to clean, they're dishwasher safe, and they load up with a lot of sauce.



HAWAIIAN HULI-HULI TERIYAKI BRINERADE AND SAUCE



*I*n 1955 Ernest Morgado cooked up a big batch of chicken for a farmer's group in Hawaii. It had been marinated in his version of the classic Japanese teriyaki sauce, and painted with the sauce on the grill. It was such a hit that, by the time he died, it had become a signature dish beloved throughout Hawaii, served mostly by shade tree cooks from roadside stands, parking lots, and parks at fundraisers. Drive around Oahu and if you see smoke rising

and smell something sweet, it is likely Huli-Huli chicken. The locals keep napkins in their glove compartment just in case.

Rather than turn scores of chicken pieces one by one when he was catering an event, Morgado sandwiched the meat between two mesh grates, and, with the help of an assistant, flipped the whole contraption. Sort of Hawaiian rotisserie. When it was time to turn, he would shout “huli” which is Hawaiian for “turn” to his assistant who would shout “huli” back, grab the handles on the other side of the grates, and turn the chicken over, lickety split. Huli-Huli Chicken was born. It’s an obvious jump to use it on turkey!

Morgado's recipe is a secret, and every vendor on the islands has his or her own variation on the theme, so this is our interpretation. Because it has a high acid, salt, and sugar content, it can keep for months in the refrigerator.

We call it a brinerade because it is a marinade with a good dose of salt from the soy sauce.

Makes. About 3 cups

Takes. 30 minutes

- 1 cup pineapple juice
- 1 cup chicken **stock**
- 1/4 cup **soy sauce**
- 1/4 cup ketchup or **red Kansas City style barbecue sauce** (below)
- 1/4 cup rice **vinegar**
- 1/4 cup **dark brown sugar**

- 4 tablespoons freshly grated ginger
- 2 tablespoons Worcestershire sauce
- 1 teaspoon dark Asian sesame oil
- 2 teaspoons Sriracha Sauce
- 4 medium cloves of garlic, crushed or minced

About the chicken broth. Feel free to substitute white wine, sherry (it doesn't matter if it is dry or sweet in this recipe), or even water.

About the vinegar. If you wish you can swap some fresh lemon or lime juice for all or part of the vinegar.

About the Sriracha. Sriracha is a garlicky hot chile paste. It is special and widely available, but if you can't get it, feel free to use whatever hot sauce you have around. This quantity is not very hot, especially when painted on chicken or turkey, but you can use less or add more to your taste.

Method

Mix all the ingredients together in a saucepan and simmer gently for about 10 minutes. You can refrigerate the sauce for months.

THE ULTIMATE TURKEY



Photo courtesy of Adam Payne

“Thanksgiving, man. Not a good day to be my pants.”

— COMEDIAN KEVIN JAMES

*T*his is no ordinary turkey preparation, pilgrims. Not only is it guaranteed to make the best turkey you’ve ever tasted, it leaves room in the indoor oven for pie, sweet

potatoes, stuffing, green beans, and more pie. Try it and you'll be cooking turkey on the grill all year-round.

The goal is moist tender turkey with clean turkey flavor and delicate smoke and herb flavors in the background, and crispy skin. That simple. Follow Meathead's logic and the result will be a magnificent looking, dark mahogany bird, with incredibly tender and juicy flesh, delicately and elegantly flavored with savory herbs and seductive smoke, anointed with a gravy that eclipses all others.

Turkey poses several problems that we can solve by thinking scientifically. Meathead's methods differ drastically from tradition, but if you follow his guidelines you can make this flightless bird soar above the flock. Do not take risks with the Thanksgiving dinner. We know you want to show off, but please resist the temptation. Play within your skillset. Keep it simple. Don't go crazy with powerful turkey injections and turkey dry rubs that hide the natural flavor of the bird. Don't try to do too much with your Thanksgiving turkey recipe. Here's a great idea: Rather than waiting for the next major holiday to roll around, when you have a houseful of critics, why not do a test run a few weeks in advance to get your technique down?

This will be the best turkey you've ever tasted. We know because hundreds of readers have written to tell Meathead so. To get there we cook the bird outdoors, adding the elegance of smoke, and along the way, we bust some well-entrenched myths.

The good news is that you don't need a smoker, although having one helps. You can become a Turkey Zen Master on any old backyard grill, or even in your indoor oven with these techniques. We begin with a summary of concepts, and then below we get into the details explaining why we want you to do it our way.

Say goodbye forever to dry, stringy, cardboardy, boring turkey and hello to the best grilled turkey recipe ever.

Makes. 1 turkey

Prep time. After defrosting, preparation takes about 1 hour

Cooking time.

Unstuffed Pounds	Whole Bird At 325 °F	Spatchcocked Or Pieces
12 to 14	2 to 2.5 hours	1.5 to 2
14 to 18	2.5 to 3	1.5 to 2
18 to 20	3 to 3.5	2 to 2.5
20 to 24	3.5 to 4	2 to 2.5
24 to 30	4 to 5	2.5 to 3

Timeline for a 6 p.m. dinner

WHAT TO DO	WHEN TO DO IT
Get all the shopping done except salad, begin thawing regardless of size	Friday before T-day
Unpack bird, check thaw	Wednesday morning
Prep gravy, make the wet rub	Wednesday
Inject (optional), apply salt, buy salad <u>fixins</u>	Wednesday
Preheat cooker and gravy, apply rub	1 p.m. Thursday
Put the bird on and add wood	2 p.m. Thursday
Add water to gravy pan, add foil to drum and wing tips if needed	3 p.m. Thursday
Add water to gravy pan if necessary	4 p.m. Thursday
Remove gravy, strain, skim fat, taste	4:30 p.m. Thursday
Remove bird, heat gravy, carve	5 p.m. Thursday
Splash with gravy, serve	5:30 p.m. Thursday
Take a bow	6:00 p.m. Thursday

A clock cannot tell you when food is cooked. Only a digital thermometer can do this. [Click here for a list of our Platinum Medal winning thermometers.](#) Turkeys are notoriously unpredictable in the wild and only slightly less so in the oven. The two most important factors in determining cooking time are the cooking temp and the thickness of the thickest piece of meat, the breast. But actual cooking time will vary depending on how well the turkey is defrosted, whether or not you brined or injected, what temp your fridge is, if it sat at room temp for a while, how close your bird is to the gravy pan, how well your cooker holds steady, the quality of your thermometers, airflow within the

cooker, humidity in the cooker, and the breast size of your bird. That's a lot of variables!

Now if you are an experienced low and slow cook, you know that low temps keep protein loose, which holds in moisture. But we are cooking at 325°F, not the normal 225°F (the slightly higher temp is needed to crisp the skin), so the bird will cook much faster than you think. Given all those disclaimers, the table here is a rough guide for how long it will take to get the temp to 160°F minimum in all parts of the bird. Do not bet on it. **Bet on a good thermometer.** If you don't have one, don't blame us if your guests get tummy aches (or worse), if you keep your guests waiting, or if you serve shoe leather.

And please don't ask us how long a stuffed bird will take. Stuffed birds are a safety risk as we discuss below, and as we also explain below, stuffing the bird guarantees overcooked breasts. We don't test recipes with stuffed birds, so we have no idea how long they take.

The bird

- 1 turkey, any size

Ingredients for the gravy

- 3 quarts water
- 1 cup apple juice
- 2 onions, skin on, ends removed, cut into quarters
- 2 medium carrots, peeled and cut into 2 inch lengths
- 1 rib of celery, leaves and all, cut into 2 inch lengths

- 1 tablespoon dried sage leaves, crumbled (do not use powdered herbs, they can cloud the broth)
- 1 tablespoon dried thyme leaves
- 2 whole dried bay leaves

Seasonings for the bird

- 1/2 teaspoon Morton Coarse Kosher Salt per pound only if it has not been injected and only if you are using a rub without salt
- 4 tablespoons **Meathead's Simon & Garfunkel** rub*
- 4 tablespoons water

** About the Simon And Garfunkel Rub. If you'd rather not make this rub from scratch you can click this link and buy [Meathead's Amazing Tuscan Herb Seasoning & Dry Brine](#) instead. It is very similar. Keep in mind that our bottled rubs have salt in them. When using the bottled rub with this recipe, you do not need to add the salt that is called for in the recipe.*

***About the liquids.** You can substitute some of the water with chicken stock, vegetable stock, or a bottle of a white wine. We often get a white wine from the closeout bin of the local liquor store. Oxidized white wine is fine; in fact we think it adds depth. Just don't use anything that has turned to vinegar. And never use red wine unless you want purple turkey! We have occasionally added mushrooms and ancho chiles to the gravy, too. You can substitute a small handful of celery leaves for the celery rib. This is a good way to get rid of them.*

About the onion skins. Onion skins contain a pigment that darkens the gravy. Using them in making stocks is an old chef trick. In fact they are sometimes used as fabric dyes. If the skins are musty, or the underlayer is mushy or rotten, discard them.

Method

1| Prepare the gravy. You need a gravy/drip pan with at least 3.5 quart capacity and it must be large enough to fit under the entire bird. The best choices are stainless steel, ceramic, CorningWare, or even a disposable aluminum pan. Don't use copper because it can react with the salts and acids in the gravy. Be forewarned, the pan will get smoky and need serious scrubbing.

This gravy is essentially a rich concentrated smoky turkey stock that will penetrate the meat, not just sit on top of it. Once you try it you will never go back to the thick floury wallpaper paste again. You will have more than you need when you are done, so you can use it in soups or as stock for pot pies, rice risotto, or couscous. The recipe here has a lot of room for improvisation.

Whatever you do, don't skip the gravy. We know this whole approach sounds odd, but trust us: This nectar is a show stopper. First time out of the gate, follow the recipe closely until you get the concept. If you wish, you can do this a day in advance.

This gravy is not the thick and pasty stuff made with flour that sits on top of the meat and forms pudding skin. This

gravy is a *jus*; thin, flavorful broth that penetrates the meat, making it incredibly moist and tasty. And if Granny insists on the thick glop, or if you need traditional gravy for the mashed potatoes, there is more than enough of this gravy to mix with flour. We'll show you how later.

There is almost always leftover gravy that you can freeze. We use it to make the gravy for turkey pot pies with the leftovers.

Add no salt to the gravy. Drippings from the meat will have salt, so wait until you taste the final gravy and add salt at the end if you think it needs more.

After the bird has thawed, open the bag it came in and pour the juices into the pan in which it was sitting. Even if the bird was salted, save those the juices for the gravy. They will not be too salty.

2| Throw out the popup. If there is a plastic pop-up thermometer, remove and discard it. If you rely on the pop-up you will be eating balsa wood not turkey.

3| Pull the stuff out of the cavities. Check both front and rear openings. Typically you'll find the neck and a bag of "giblets" in there. Put the neck in the gravy pan. The bag usually contains the heart (looks like a heart), the gizzard (two marbles connected in the middle), and the liver (it is the floppy, shiny thing). Put everything except the liver in the gravy pan. The liver will *not* be used for the gravy. Freeze it in a zipper bag and save it along with other chicken and duck livers until you have enough to make a nice pate, or toss it in a pan with some oil, cook it, and feed it to the dog.

4| Trim. Remove “the part that goes over the fence last”, and trim excess skin and fat from around both cavities, front and rear, and put them in the pan along with the neck, heart, gizzard, and juices. Then whack off the wing tips at the first joint and toss them in the pan. If you are spatchcocking, and we think you should, throw the backbone in the pan after you cut it out. Rinse the brown organ meat (kidneys) off the backbone and discard (it is not tasty).

5| Add the rest of the gravy ingredients to the pan and refrigerate. We will use it when we cook the bird. Here's the pan before cooking.



SEASONING

A dry rub is a mix of spices and herbs rubbed onto meat, but for turkey, we're going to use a wet rub, a mix of herbs and spices with water. Turkey and herbs get along like peanut butter and jelly. To learn more, click here to read Meathead's article [about Herbs and Spices](#).

The wet rub goes under the skin so the herbs and spices can be in intimate contact with the meat. Then we'll put some rub on top of the skin to flavor everybody's favorite part. If you don't want to fuss under the skin, you won't lose much if all the seasoning goes on top of the skin.

We recommend you use our recipe for [Meathead's Simon & Garfunkel](#) rub or purchase [Meathead's Amazing Tuscan Poultry Rub And Dry Brine](#). It's a mix of parsley, sage, rosemary, and thyme (sing it) and other goodies.

Instead of a wet rub, sometimes, if the sage in our garden hasn't frozen by Thanksgiving, we will put several whole fresh sage leaves under the skin instead of a wet rub and use a dry rub on the outside. You can see the sage leaves under the skin in the picture below. They taste great and look cool.



6| Salt. If the bird has not been injected with salt at the factory or if you are using a salt free rub, then sprinkle the salt on the bird, inside and out, heavier on the breasts. If time permits, do this the day before to allow the salt to penetrate.

7| Rub. Mix the rub with water about 1 to 1 by volume. Take off your Superbowl ring, and gently push the rub under the skin covering the breasts. Spread it out and work it as far down to the thighs and legs as possible. Try to avoid leaving behind large clumps. In 2014 Meathead got the Tweet below from Max Unger, All-Pro center and then a member of the world champion Seattle Seahawks, asking him about the instructions here (it was step 2 back then):



Max Unger

MaxUnger60

Hey @ribguy . step 2 says "take off Super Bowl ring, and push herbs and oil under skin." Is that mandatory or what?



Best Tweet I ever got, from Max Unger, Center, Seattle Seahawks, 2014 Super Bowl Champions.

8| **Spread** the remaining rub on top of the skin. If you run out, rub the exterior with olive oil or vegetable oil and

sprinkle it gently with a little black pepper, sage, and thyme. Then sprinkle salt on the skin to help it crisp.

9| Do not tie the legs together. Most turkeys come with an armature holding the tops of the drums together. And most cookbooks tell you to tie them up if they didn't come that way. This just doesn't make sense. Here's why:

Dark meat is safest and tastes best at about 170 to 175°F, but if you tie the drums together you pin the thighs tight against the body of the bird and they'll take longer to cook. Also, the skin in the crotch won't brown. So if you remove the bird when the breasts are 160°F, the thighs will also be about 160°F. But if you let their freak flag fly, heat will infiltrate them from all sides and, because they are thinner than the breasts, they will be at 170°F when the breasts hit 160°F.

Some chefs tell you to put ice bags on the breasts before cooking in order to chill them so that the thighs will have a head start. One *New York Times* expert whom we normally worship even uses Ace bandages to hold the icebags in place so the poor turkey looks like it was up all night drinking Wild Turkey. Just let the thighs free so hot air can surround them. That will do the job just fine, thank you.

If there is any rub left, toss it in the gravy.

FINALLY! LET'S COOK THAT BIRD!

Finally! All the pregame activities are over. It's time to get down to business. You want to begin by preheating the oven

about 5 hours before your guests are ready to sit down. Yes, your grill or smoker is really an outdoor oven. Get over it.

10| Crank your oven/grill/pit up to 325°F or as close as possible measured at the level of the cooking grate by a digital thermometer. Do not measure the temp using the cheap thermometer in the lid unless you plan to eat the lid. There can be a great difference between the grate temp and the lid temp.

11| Clean. When it is hot, clean the grate that you will cook the bird on *before you put the drip pan in*. Week-old grease and gunk on the cooking grates will not add the kind of complexity you want in your gravy. Now put the drip pan and all the gravy fixins onto the cooker at least 2 to 3 inches below the bird if possible.

12| Probe. If you have a leave-in digital thermometer with a probe on a wire, insert the probe into the breast so the tip is in the center of the thickest part of the breast, being careful not to touch the ribs. Digital thermometers have small sensors and they are very close to the tip, so they are by far the best. The sensitive areas of a dial thermometer are too big to be accurate.

13| Now add your smoke wood. Turkey loves smoke, but too much can ruin it in a hurry, and there is a fine line. The first time you try this recipe we beg you to go easy on the smoke wood. Overdo it and the bird will taste like an ashtray.

We have had good luck with apple, alder, peach, cherry, and oak. Avoid mesquite and hickory. They'll work, but we think they're a bit too strong for delicate lean meats like turkey.

On a gas grill you'll need 4 to 8 ounces of wood. You may decide after tasting it that you want more on your next cook, but don't ruin the first one with too much smoke.

On a gas grill place one golf-ball sized chunk of wood right on a burner in the flame. Chunks smolder slowly, but if you do not have chunks, you can use chips or pellets.

To use chips or pellets, toss them in a disposable aluminum pan and put it as close to the flame as possible. *There is no need to soak the wood.* Wood does not absorb much water. That's why they make boats out of it. Let the wood catch on fire. Burning wood makes better tasting smoke than smoldering wood. [Click here for more on The Science of Wood.](#)

14| Place the bird on the cooking rack, breast side up, close the lid and don't open it for an hour. That means no basting. Not if you want crispy skin. Remember, basting just makes the skin wet and soft.

15| Check the progress and when the wing tips and drumstick tips look nice and brown, after 30 to 60 minutes, grab 4 pieces of aluminum foil, each about 8 inches square, and coat one side with vegetable oil so it won't stick. Cover the tops of the wings and drumsticks with the foil. You did lop off the wing tips and toss them in the pan for the gravy, didn't you? The foil will keep these skinny parts from burning.

If you are not using a leave-in probe, spot check the temperature with a good digital instant read thermometer by inserting the probe into the deepest part of the breast. Push

the tip past the center and pull it out slowly. The lowest temp is the one to watch for. You can do this occasionally as needed. **You won't harm anything by peeking.** If necessary, add a quart of *boiling* water to the gravy pan. Don't add cold water or you can cool off the cooking chamber. Make sure there are at least 2 inches of liquid in the pan at all times. *Do not let the onions and other solids in the pan burn!* Let them get dark, but not black. While you're under the hood, if you are using charcoal add another 15 to 20 chunks every hour. Resist the temptation to reach for the wood chips. The charcoal will make enough smoke.

If you fear that the bird is progressing too slowly and you are having trouble keeping the temp up to 325°F, preheat your indoor oven to 325°F and move the bird and the gravy pan inside. Finishing it this way is fine. You will not lose your pitmaster card. The smoke flavor is already on the bird so now your focus must be on making sure it is not under- or overcooked.

16| Finishing the bird. As the meat temp approaches 160°F, tilt the bird and drain the cavity into the gravy pan below. Now check temps all over, especially the back which can be a bit soggy or even undercooked if it is very close to the water. If the back isn't 160°F, remove the gravy pan and put the bird over direct heat to firm it up (or just leave it in your indoor oven a bit longer). This should take no more than 20 minutes or so, but watch things, because without that buffer of water in your outdoor oven, you can burn the back in a hurry.

Now it is time to move the bird to the cutting board or a platter. Pick a platter with a lip that will contain the copious juices. *A lot of books say you should put a foil tent on the bird and rest it. Don't do it. This just makes the skin soggy. **It does nothing to improve juiciness.** Serve your meat hot and crispy. It will get more than enough resting as you move it from the cooker and while you carve.*

If you are going over the river and through the woods with your bird, or if your bird finishes early, read about how to keep it hot with **a faux Cambro.**

17| Finishing the gravy. Carefully remove the gravy pan from the cooker. Pour the gravy through a strainer into a large pot or saucepan. Discard the solids. They have given you their all. Let it sit for about 10 minutes. Now taste the juice under the fat. It should be rich and flavorful. If you find the juice too weak tasting, bring it to a boil and cook it down a bit. Taste again and add salt only at the last minute. If you add salt and then reduce it, it will be too salty. We use **the OXO Fat Separator**. On the fat separator, when you remove the red plug, clear stock rises up the spout and when you pour, the fat gets left behind. If you don't have a fat separator, use a large spoon or basting bulb to remove most of the fat from the surface of the pot. You'll never get it all, so don't obsess.



Pour the gravy into a pre-warmed coffee carafe to keep it warm, especially if you have to go to someone else's house for dinner. The fat rises in the thermos, so you can just pour some off before serving, or shake it up to mix it in. When you are ready to serve the bird, you can transfer some of the gravy to a pre-warmed gravy boat or serving bowl if you don't like the looks of the carafe. Splash some on the carved meat just before you put the platter on the table.

As proof of its goodness, when you chill the leftovers the gravy will solidify into a jelly. That's what happens to melted collagens: they turn to gelatin, and collagens bring flavor and texture to the table. See [Meathead's article on meat science](#) for more on the subject.

Try to resist the temptation to thicken this gravy with flour or cornstarch. If the idea is to moisten meat, starchy sauces just don't get the job done. Starches are large molecules and they can't penetrate the tiny openings in the meat. Starchy gravy just floats on top of the meat like a life preserver after the ship has gone down. Our thin gravy will soak into the meat and add much more flavor. After you taste it, you won't serve the thick high school cafeteria stuff again. But if there are hardened traditionalists in the house, we have included instructions on how to satisfy them with **Granny's Gravy** below.

GRANNY'S GRAVY



We think we have made a strong case for a thin gravy that actually penetrates meat, but if you absolutely must make traditional thick gravy, here's how:

Method

1| Make a roux. Take about 4 tablespoons of melted turkey fat and/or butter and put it in a saucepan over medium heat with 4 tablespoons of flour (the ratio is 1:1). Flour tastes better than cornstarch if you do this properly. Whisk the flour until the mixture is smooth, and keep whisking until it starts to turn pale amber, about 3 minutes. This is called a *medium roux*. The browning cooks the flour and kills the pasty flavor. You can make it richer by cooking it longer and letting it get darker, but don't let it turn brown.

2| Add drippings. Slowly pour 1 cup of the smoked turkey drippings into the roux, whisking it over medium heat as you pour, and keep whisking until it thickens and all lumps are gone.

3| Taste it before you add anything. You will probably want to add another cup of the thin gravy. You should not need to add salt and pepper. This should make the traditionalists very happy because this smoky, enriched stock will taste better than any gravy Granny's ever had.

TURKEY PARTS



Strongly consider cutting the bird into parts. You will be able to get it browned on all sides (brown is beautiful, brown is the flavorful **Maillard reaction**). When you cook a whole Norman Rockwell bird, the cavity never browns. When you cut it into parts it cooks faster so there is less moisture loss and it is more even in temperature

throughout, and you can remove each part at optimum temp (breasts 160°F, thighs and drums 170°F).

If you are using a grill in a **2-zone setup**, you can start the parts in the indirect zone with some smoke, and then, when the meat hits about 150°F, flip them skin side down on the hot side to make them ultra crispy. *In fact, this method is ideal for a grill, so if you don't have a smoker, give it serious consideration.* You also get a whole carcass to add to the gravy, and that's more flavor.

The only drawback is that a cut-up bird needs more cooking surface than a whole bird, and you don't have the drama of presenting a whole bird.

In the picture of a lightly smoked bird above you can see the wings on the left, boneless breasts with the tenders removed and grilled separately, drums, and boneless thighs. Done this way it is easy to get really moist meat with each piece removed at optimum temp, and sliced across the grain.

“I can have Thanksgiving all year round.”

— CINDY MARGOLIS

The approach is pretty much the same as carving a cooked turkey. While the bird is raw, remove the wings. Cut the tips off the wings and throw them in **the gravy**. Cut off the thighs at the ball joint where they meet the body. Bend each drum and thigh away from each other so it is easy to find the knee joint and cut them apart. Now remove the breasts by running your knife along the sides of the breast bone and follow the

bones with your knife along the rib cage until you have two big boneless breasts just like you would when **carving a cooked bird**. Underneath each breast you will find a muscle that is loosely attached called the tender. Remove it because there's a good chance it will fall off during the cook. We'll tell you a secret. We usually toss these in the fridge and grill them the next day. They're perfect for sandwiches. But first you want to remove the tough tendon in there as shown in the picture.



Then comes the only tricky part, removing the thigh bone. This makes the thigh really easy to slice when cooked. With a sharp tipped knife, slice along both sides of the bone. Then slip the knife under the bone and scrape it along the bone until it comes out.



Bust up the carcass and throw it all in the gravy/drip pan ([click here for more on how to make the gravy](#)). Dump any juices from the bag into the gravy too. Keep in mind that a 16 pound bird will yield about 10 pounds of meat (including the wing and drumstick bones).



Preheat the grill in a **2-zone setup** and shoot for about 325°F in the indirect zone or get your smoker settled in at that temp. Put a grate above the gravy pan. Start the thighs and breasts first on the indirect side. After 15 to 20 minutes, add the drums and wings. Watch their temps individually with an instant read thermometer. Remove the breasts and the thick part of the wings at 160°F and the dark meat at 170°F. When the meat hits about 150°F, if the skins aren't crisp, move the meat over to the direct side. If you want, you can even go crazy and paint on a sauce or a glaze. Everything will be tender, juicy, and finished in about 1.5 to 2 hours because parts cook more quickly than a whole bird.

THAT VALUABLE CARCASS



Do not discard the cooked turkey carcass. There is plenty of meat left and plenty of flavor inside those bones. Don't leave it sitting at room temp for more than 30 minutes.

Method

1| Pull. Once the guests are gone (or the next day if you're beat), wash your hands well, and begin pulling all the remaining meat off the carcass. Set it aside **for smoked turkey supper salad (below), smoked turkey pot pies (below), [turkey sandwiches](#), turkey fajitas (below),** turkey salad, turkey soup, or pulled turkey. The meat freezes well if wrapped tightly in plastic wrap or a zipper bag.

2| Break some bones. Take the stripped carcass bones and break them into chunks. Put the broken bones into a deep pot, cover with water, and toss in 2 chopped carrots, 2 chopped onions (skins and all), a few celery leaves, a bay leaf, and some herbs. Add any leftover gravy from when you cooked the bird.

3| Simmer. Bring to a gentle simmer over medium heat. Do not boil yet. Simmer just below the boiling point for at least 2 hours and up to 6 hours. Turn off the heat, skim the scum, remove the big chunks, set them aside, and strain. Taste it but resist the temptation to add salt. You can always add it later, but you can't take it out. Thin it if you wish (add water) or boil it down to make it more concentrated. Now pick any boiled meat off the carcass and add it to the other leftover meat.

4| Freeze. We like to freeze the resulting stock in ice cube trays. Then we drop the cubes into a zipper bag and label it with the date. The next time you are making rice, risotto, couscous, paella, or soup, use the frozen cubes for a wonderful flavor. Pour some in an ovenproof bowl, add some **caramelized onions**, float a toasted crouton on it, put some muenster cheese on top, stick it under the broiler, and you've got a killer French onion soup.

BREASTS ONLY



*I*f you don't want to do a whole bird, you can buy turkey breasts or legs or wings. Breasts come in three forms:

Method

1| A breast with two lobes cut off the bird with bone in (below). A 3 to 6-pound whole double bone in breast will be done in 1.5 to 2 hours at 325°F, and larger breasts will be done in 2 to 2.5 hours.



2| A single boneless lobe of breast (below). A boneless single breast lobe of 2 to 3 pounds will take about an hour.



3| Two lobes de-boned and rolled together and held tight with a mesh. The mesh is a bit of a pain to get off after you are done cooking. We much prefer the bone in breasts or boneless breasts.



When cooking breasts only, just follow the same basic concept as for the whole bird. Inject or dry brine, watch the temp like a hawk circling a flock of turkeys. You will need to add chicken stock to the gravy because there will be few drippings and no neck and skin to throw in there. Another option is to paint them with a Teriyaki or Yakitori sauce. Here's a link to my [Hawaiian Huli Huli Sauce](#) recipe above. It is a form of Teriyaki sauce.

DRUMSTICKS ONLY



Drumsticks are justly popular with both kids and adults. They're like an entire meal you can hold in your hand. Cured sticks are hugely popular at Disney theme parks in the US, and we have the recipe below. But if you don't have the time or ambition to cure the sticks, here is a tried and true recipe that can be finished in a variety of different flavor and texture profiles. Bang the drum!

Legs can be cooked successfully by simply dry brining, dusting with a rub, and smoking indirect at 325°F. For extra crispy skin, roll them around over the hot side of a grill for a

few minutes, lid up. Big Tom legs take 1.5 to 2 hours. Wings, 1 to 1.5 hours.

These drums are a huge hit if you give them a light coat of [Kansas City style red barbecue sauce](#).

Makes. 4 drumsticks

Takes. About 30 minutes to dry brine, 1.5 to 2 hours to cook

- 4 large turkey drumsticks, about 1 pound each
- 2 teaspoons Morton Coarse Kosher Salt
- 4 teaspoons of Poultry Seasoning or Rub (see above)
- About 1/2 cup [Huli Huli Sauce](#) or [KC-style BBQ sauce](#)*

About the salt. If you use Meathead's Poultry Rub, skip the salt.

** About the KC BBQ Sauce.* If you'd rather not make this sauce from scratch you can click this link and buy [Meathead's Good Enough To Drink KC BBQ Sauce](#) instead. It is very similar.

Method

1| Dry brine. Lay the drumsticks out on a plate, sprinkle both sides with the salt, and let them sit in the fridge for at least 30 minutes to [dry brine](#). If you prefer, you can [wet brine](#). Then sprinkle with one of the rubs above.

2| Fire up. Prepare the grill for 2-zone cooking and shoot for 325°F in the indirect zone. Place the drumsticks on the indirect side and just let them roast there. If you want, throw

some wood on the fire and make some smoke. Or, fire your smoker up to 325°F.

3| Cook. When the meat close to but not touching the bones, hits 155°F, move the drumsticks to the direct heat side and lift the lid. Brown both sides, turning frequently, and get the skin crispy.

4| Sauce and Serve. Paint your sauce on both sides and move them *back* to the indirect side. Close the lid and let the sauce bake on for about 3 to 5 minutes. Then lift the lid, paint on a second, final coat, and move them back over direct heat, lid open, for 1 to 2 minutes per side. Stand right there and let the sauce sizzle and bubble, but don't let it burn, and you're ready for a sticky delight.

DISNEY STYLE DRUMSTICKS





“Enough is as good as a feast.”

— MARY POPPINS

Visit any of the Disney parks in the US and you will see folks stumbling around delirious with huge smiles and monster turkey drumsticks. These pterodactyl-sized drums have spawned fan pages, scores of videos on YouTube, and rumors (no they are not emu legs). They have

become so popular that they were featured on page one of the New York Times once. They are not hard to make at home once you crack the secret recipe, which we have done.

Rather than using ordinary grocery store female turkeys that are usually about 20 pounds, Disney's supplier uses Tom turkeys, male birds that can grow up to 50 pounds, with legs that run about 1 1/2 pounds. Tom drumsticks this large are hard to find but your butcher may be able to order them for you. If not, our recipe works fine with hens' legs, typically 10 to 12 ounces, they will just be smaller and cook faster. Not many stores carry solo turkey legs, but if you ask your butcher, he or she can order them, usually in just a few days. If you can't get them, the recipe works just fine on chicken legs too.

Disney legs are injected with a curing brine that contains both salt and a special curing salt that gives it a pink color, and then the legs are smoked. No wonder most folks say it tastes like ham. That's how they make wet cured ham. Curing is what makes these turkey legs pink. And that's how they sell drinks!

Even if you have an injector, we recommend a slightly different method: Soaking in the curing brine since a single needle injector tends to create pockets of brine.

Curing meats is fun and the results are often better than store bought. But curing is very different from any other recipe because you are using a preservative, sodium nitrite. *You must read and thoroughly understand the concepts in*

our article on the [Science Of Curing Meats before attempting](#) to cure these turkey legs.

Keep in mind, this recipe brines/cures in a zipper bag so you can get away with a small quantity. You just need to move the legs around in the bag periodically to make sure the cure is in contact with all parts of the meat.

Makes. 2 drumsticks of which Mickey would be proud. For more drums, increase the quantity of the brine, but not the time.

Takes. 10 minutes of preparation, 24 hours to cure, 90 minutes to cook.

- 2 large turkey drumsticks, about 1 pound each
- 1 tablespoon [Morton Coarse Kosher Salt](#)
- 1/2 teaspoon [Prague Powder #1](#)
- 3 tablespoons dark brown sugar
- 1 cup water

Method

1| Cure. Dissolve the salt, Prague powder #1, and the sugar in the water and then pour it in a 1-gallon zipper bag. Add the meat and refrigerate in the cure for about 24 hours, and not much longer or it can get too salty. While they are curing, move them around a bit several times to make sure all parts are covered with the liquid. You can then take them out of the cure and hold them in the fridge uncooked for a day or

two until you're ready to cook, but we wouldn't push beyond that.

2| Rinse. Remove the meat, rinse it so the exterior will not be too salty, and pat the skin dry with a paper towel.

3| Fire up. Set up the grill for 2-zone smoking or fire up your smoker. Shoot for 325°F on the indirect side.

4| Cook. Smoke the turkey leg on the indirect side of the grill for about 1 hour until the thick part of the meat reaches at least 160°F.

5| Serve. Serve the smoked turkey leg immediately. You'll feel like the king of the court, wielding your giant smoked turkey leg like a scepter.

SOUS VIDE QUE, A HIGH TECH TURKEY RECIPE



This recipe will make the best turkey you have ever tasted, guaranteed. It will feature superbly tender and juicy meat from the extremely low and slow sous vide method, highlighted by the delicate elegance of hardwood smoke and crispy skin. Here's how.

If you are not familiar with the concepts of sous-vide-que, permit us to recommend [another one of our Meathead's Deep Dive Guides](#) on the subject, available on Amazon for only \$3.99. click the link. You will need a sous vide immersion circulator such as the [Joule](#), our fave. You will also need a grill and hardwood chips, pellets, or sawdust. We want lots of smoke in a hurry, so chunks are not ideal. We do it with [GrillGrates™](#), a product that puts the smoldering wood within 1/2 inch of the meat. Your Thanksgiving or weeknight turkey will never be the same.

[Here's a 2 minute video on the whole process.](#)



Makes. 6 to 10 servings depending on the size of the bird

Takes. 14 to 24 hours

- 1 whole turkey
- Morton Coarse Kosher Salt
- Sugar
- [Hawaiian Huli-Huli Teriyaki Marinade and Sauce Recipe](#)

About the Huli-Huli. You can easily make your own by following the link above, or just buy a premade teriyaki sauce and it will work fine.

Method

1| Prep. Break down the bird into quarters: 2 breast lobes with wings, and two drumstick/thigh combos. Sprinkle with about 1/2 teaspoon of salt per pound of meat and a similar amount of sugar, then place into freezer safe zipper bags and

let them sit in the fridge for about 2 hours so the salt can penetrate.

2| Set up the sous vide machine. The experts at Joule recommend we cook the breasts at 130°F and legs at 150°F, but our tests found very little difference if you compromise and cook them both at the same temp, 140 to 145°F. So set your sous vide machine for one of them.

3| Cook. Slowly slip the bags into the water so the water pushes out the air and then seal them. Push them under water. [Here's a 40 second video on the process.](#) If the bags float, open them and insert a weight like a spoon. Leave the bags in the water for at least 12 hours. Watch the water level since some will evaporate. You can drape the top of the container with a plastic bag weighted down with a clean kitchen towel to cut down on evaporation.

4| Make gravy. After 12 hours or more, remove the meat and pour the juices from the bag into a sauce pan. Bring to a low simmer and skim off any scum. Season the “jus” with salt and herbs. We like thyme and sage. Strain. This is the basis of your gravy. You can thicken the “jus” with a roux made from equal parts butter and flour stirred and heated in a pan ‘til it turns pale yellow, but we prefer to serve the gravy thin so it can penetrate a bit.

5| Crisp the skin. Pat the meat dry. Fire up a grill, get the direct heat side up to Warp 10, as hot as possible and throw wood chips or pellets on the fire to generate as much smoke as possible. We like to use a product called [GrillGrates™](#) because it has valleys in the bottom that can hold wood chips

or pellets, and thus smoke, in very close proximity to the meat. Paint the meat with the Huli-Huli sauce. Turn the meat every 2 to 3 minutes so the grates don't burn the skin. Leave it on just long enough, with the lid up, to color and flavor the meat without overcooking it. Serve.

SPATCHCOCK TURKEY WITH SAGE BUTTER



“What we're really talking about is a wonderful day set aside on the fourth Thursday of November when no one diets. I mean, why else would they call it Thanksgiving?”

— ERMA BOMBECK

*A*lthough spatchcocking the turkey means you won't have that giant Norman Rockwell bird to present to your guests, it does ensure that the dark and white meat are

cooked to perfection as the heat from the smoker or grill is evenly dispersed across the entire surface of the bird. The spatchcocked bird cooks much faster than a whole one, preserving moisture.

Makes. 1 turkey.

Takes. 30 minutes to prep and 2 1/2 hours to cook

Sage Compound Butter

- 2 cloves garlic
- 8 tablespoons unsalted butter, at room temperature
- 2 teaspoons finely chopped fresh sage
- 2 teaspoons finely chopped fresh rosemary
- 1 teaspoon finely chopped fresh thyme leaves
- 1 tablespoon finely chopped fresh parsley

Citrus and Herb Salt

- 1/4 cup Morton Coarse Kosher Salt
- 1/2 teaspoon fresh thyme leaves
- 1/2 teaspoon chopped fresh rosemary
- 1/2 teaspoon lemon zest
- 1/2 teaspoon lime zest
- 1 clove garlic

Turkey

- 1 (12 to 14 pound) turkey, thawed

- 2 tablespoons vegetable oil

About the fresh herbs. If you can't find fresh herbs you can use dried, but use about half the quantity since they are more concentrated.

Method

1| Compound butter. Mince the garlic then combine with the remaining ingredients in a small mixing bowl and blend well. Set aside until ready to use.

2| Salt combo. Prepare the herb and citrus salt by combining the ingredients in a coffee or spice grinder or food processor or blender and pulse until all the ingredients are completely combined. Set it aside until ready to use.

3| Spatchcock. Use poultry shears to cut along both sides of the backbone and remove it. [See here for a step-by-step guide](#). Turn the turkey skin side up and flatten it by pressing down on the breasts with your palms. You may hear the breastbone crack, which is fine.

4| Massage. Gently work the compound butter under the skin of the turkey, massaging it with your fingers to spread it over the breasts and into the thighs and legs. Rub the outside of the turkey with the oil and season with the herb and citrus salt.

5| Fire up. Prepare a smoker or prepare a grill for 2-zone cooking. Set a disposable aluminum pan beneath where you will place the bird and add approximately an inch of water to

the pan to catch the drippings so that they can be used for gravy. Adjust the vents to bring the temperature to about 325°F and add 2 to 3 chunks of your favorite smoking wood to the charcoal.

6| Cook. Place the spatchcocked turkey skin side up on the smoker or the indirect side of the grill above the drip pan, positioning it so that the legs are facing the heat source. Cover the grill and allow the spatchcocked turkey to cook until the breasts reach an internal temperature of 160°F, approximately 2 to 2 1/2 hours (Note: Your cooking time will depend a lot on the outdoor air temp, the thickness of the breasts, and the unique characteristics of your cooker. It is best to use a remote temperature probe such as [**the ThermoWorks Smoke**](#) so that you can monitor the internal temperature of the meat while preparing the rest of the meal and enjoying the company of your guests).

7| Serve. Remove the turkey from the grill, [**carve**](#), and serve immediately.

DEEP FRIED TURKEY



WARNING: DEEP FRYING TURKEY IS DANGEROUS. PLEASE READ THESE INSTRUCTIONS AND ANY INSTRUCTIONS THAT CAME WITH YOUR FRYER CAREFULLY. IF YOU DO NOT

FOLLOW THEM YOU CAN EASILY SUFFER PROPERTY DAMAGE, PERSONAL INJURY, AND EVEN DEATH.

Deep frying turkey is a popular cooking technique because, if done right, it is fast, yields the best crispy skin, juicy meat, and it is mucho macho. But it is also mucho dangerous. Just Google "[deep fried turkey disaster](#)." This is by far the most dangerous way to cook a turkey and ruin Thanksgiving.

Select the right spot. Stay at least 10 feet away from structures that can catch on fire and don't work under an overhang or a tree. Stay off the grass. The heat and any spilled oil will destroy it and it will not grow back easily. Asphalt can melt. Wood and plastic can catch fire. *Work on level concrete or dirt and keep away from children, pets, flying soccer balls, and any other hazards.*



You must be absolutely sure the oil will not overflow the pot because if it does, the flame below will surely ignite it and that will set the entire pot of oil on fire. And anything flammable nearby. Make sure that when the bird is fully submerged in oil there is at least 4 inches of space above the oil level. We'll explain below how to do this.

Water is the enemy. Do not inject, marinate, or wet brine the bird. Pat the bird dry before dunking it in oil. A wet bird, rain, or snow can cause flying droplets of oil, and scorching steam. Wear heavy gloves, a long sleeve shirt, long pants, and shoes, not sandals.

What causes bubbling, then overflow, then fire? Water. The bird is 75% water and if you take it out of the fridge at 38°F and lower it into 350°F oil, the temperature of the bird will rise rapidly. Near the surface it can easily reach 190°F and start steaming. It can even reach 212°F, the boiling temp. That steam within the oil creates large bubbles that burst on the surface aerosolizing the oil. If that oil falls onto the flame it can ignite, and if there are a lot of droplets, there can be a flaming cloud that ignites the surface of the oil in the pot. If this happens, turn off the valve on the gas tank and place a lid on the pot to extinguish the fire. But that might not work.

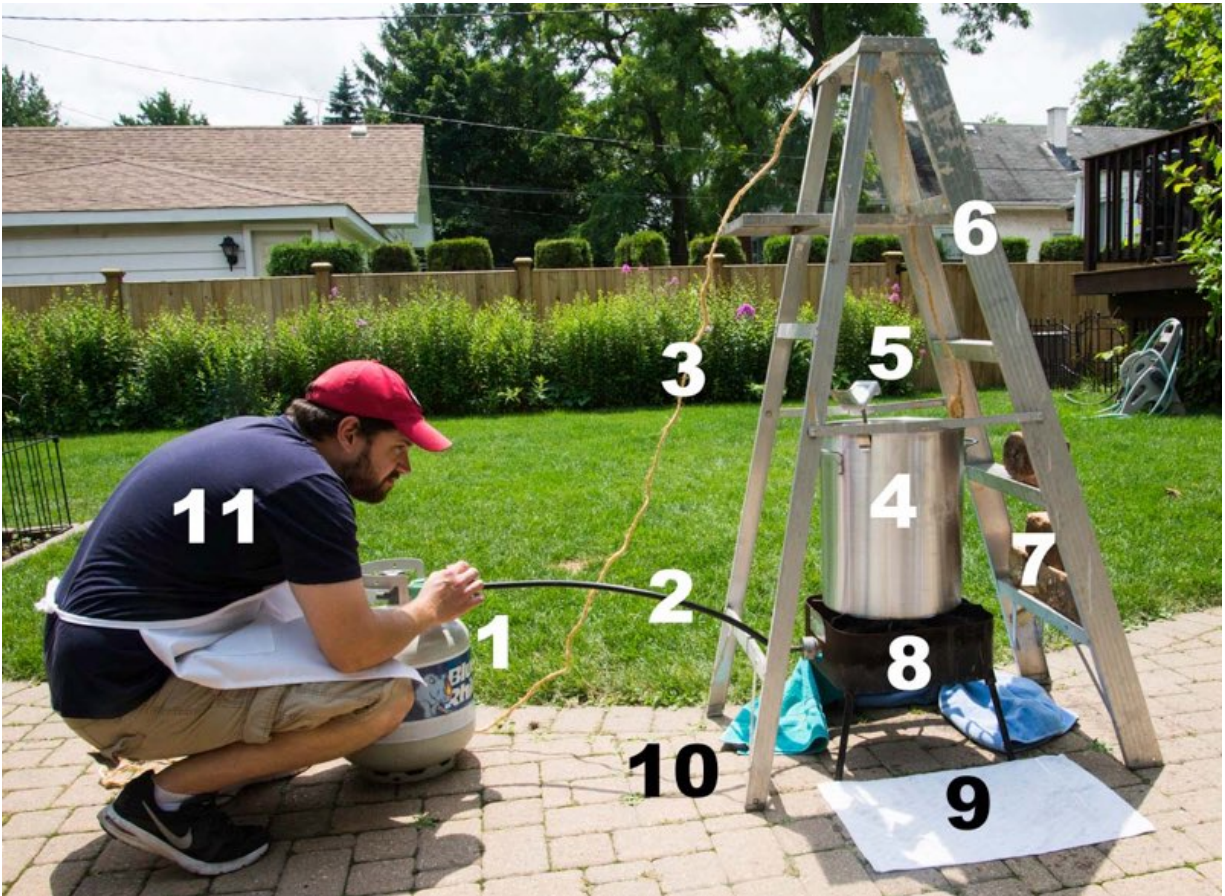
Have on hand a dry chemical fire extinguisher. Never use a hose or water to try to douse a grease fire. It will only spread it around and make it worse. Keep a phone nearby with the fire department on speed dial.

DEALING WITH THE LEFTOVER OIL

You can reuse the oil once, but the heat alters its chemistry and it does not keep well once it has been used. In addition, it now contains fats from the bird and burned bits of spices. The best idea is to throw out the oil after each use. But if you want to use it a second time, allow the oil to cool completely then strain it with a fine mesh strainer to remove large chunks of skin and seasoning. Then run it through several layers of cheese cloth or coffee filters. It takes a while. It must be stored in a refrigerator to delay oxidation and rancidity. Don't store the oil in an aluminum pot. Salt in the oil from the first cook can corrode the metal and spoil the oil. Use a very clean glass or plastic container or a stainless steel pot. It can be kept for 2 to 3 months in the fridge. It may get cloudy in the fridge, this is normal.

When it is spent, do not pour it down the drain. It can easily clog your plumbing or the sewers. You can pour cool oil into a jug, seal it tight, put that in a plastic bag, and toss it in the trash. Some cities have designated places to take cooking oil for recycling where it can be made into biodiesel, soap, cosmetics, pet food, and glue. Google "cooking oil donation [your town]". Or ask a local restaurant what they do with used fry oil. They might even take it off your hands if you are a regular customer. Many restos have oil drums out back that are picked up by recyclers. The best way to discard it is to mix it with cat litter or sand and then it can go into a trash bag.

THE PROPER SETUP



Frying a whole turkey is expensive. You need some special gear. Above is the proper setup.

- 1) **Propane tank.** Make sure it is full so you don't run out.
- 2) **Long hose and regulator** to keep the tank away from flame and so you can turn off the gas from a distance if there is a problem.
- 3) **Rope** to lower the bird into the oil from a safe distance. On the end of the rope, inserted in the bird is a **Lifting hook**. It looks like a grappling hook and the stem goes through the cavity while the tines come out the other side and hold the

bird from below. Alternatively, a **perforated fry, steam, boil, basket with a sturdy handle** will do. This is a basket with holes that slips inside the pot and makes it easy to lower and raise birds into and out of the oil.

4) 26 to 32 quart pot. It can also be used for boiling lobsters, crawfish, crabs, shrimp, corn on the cob, potatoes, and even pasta. You can also use it to make mass quantities of barbecue sauce, spaghetti sauce, South Carolina hash, and more. Most pots are aluminum, and a few are stainless. Aluminum works fine for frying, but should not be used for things like crawfish boils or making spaghetti sauce because they can react with acid and salt. Stainless steel is easier to clean and more versatile because it is non-reactive. You can also store the oil in stainless. For bigger birds, you will need a bigger pot, but I do not recommend going over 12 pounds. It is hard to get the interior of the breast cooked without burning the skin on bigger birds. Some come with a spigot at the bottom for draining the oil and then you can use it for a drink dispenser.

5) Oil thermometer. Use a digital thermometer to monitor the oil temp. If the oil is too hot it can smoke and catch on fire or cook the outside long before the inside and dry out the meat. You need a thermometer with a probe long enough to reach the oil and a clip to hold it to the pot. I like the **Maverick CT-03 Oil/Candy Fryer Thermometer**. You also need a **meat thermometer**. The best choice is a "leave in" digital thermometer than can be stuck into the breast and left there so you can read the temp as it cooks. If necessary you can get by with a rapid read thermometer but to do it

you need to lift the bird out of the oil. A good timer is also useful. I love the **Thermoworks Timestick**.

6) 6 foot folding step ladder. You really do not want to lower the bird in while standing next to a pot of boiling oil. A random spatter of hot oil can make you drop the bird into the oil and start a disaster. This is a great way to scald yourself and spend the day in the hospital. Put the folding ladder over the pot and lower the bird in with the rope. Another technique is to use a sturdy broom handle and have one person on each end, but the ladder is my choice.

7) Bricks to counterbalance ladder.

8) Propane burner/stand. You want something with wide legs that will not tip easily. You need a long hose to keep the tank well out of harm's way, and easy for you to reach in case you need to turn off the valve if there is a fire. My favorite is the **Bayou Classic SP10 High-Pressure Outdoor Propane Cooker**.

9) Towels to catch splatters.

10) Solid base under the whole shebang. Don't do this on grass.

11) Attendant. You need to be near the apparatus for the entire cook.

Also) Heavy gloves. **My favorites, by far, are leather welder's gloves** and **safety glasses** in case there are splatters.

You can buy a frying kit at the hardware store and get a serviceable cheap aluminum rig. My favorite is the **Bayou**

Classic 32 Quart Stainless Steel Propane Turkey Fryer Kit. It has most of the features I recommend below. Bayou Classic makes a wide variety of excellent fryer kits and parts. They set the standard.



Makes. Enough to feed 8-12 people

Takes. It will take about 20 minutes to prep the bird, 20 minutes to set up the fryer, 30 minutes to preheat the oil,

about 3 to 4 minutes per pound to cook to 160°F in the breasts at 350°F, and 15 minutes for it to cool enough to carve. Cold windy weather will slow the process. Total elapsed time, about 1 1/2 hours depending on the weather and the size of the bird.

- 1 (12 to 18 pound) turkey
- 1 teaspoon Morton Coarse Kosher Salt per pound of meat
- 12 quarts high smoke point oil such as peanut oil, refined canola oil, corn oil, or sunflower oil

About the bird. The smaller the bird the better. Thick pieces of breast meat cook slowly and the skin can burn in the process. 12 pounds and under is the best size. If you have a larger bird you should remove the legs where the thighs connect with the body and fry them separately, but that's no fun.

About the oil. Some people are allergic to peanut oil, so ask first.

Method

1| Safety first. The bird must be fully thawed. Never stuff the bird and remember to remove the giblets and neck from the front and center cavities. Drain all liquid from the cavity. Trim off excess flaps of skin, the tail, and the wing tips. They will burn. Make sure there is an open channel through the body cavity to the neck cavity so you can see daylight on the other side. You need to do this to prevent an air bubble and so you can drain the bird when you are done. Remove the

plastic popup thermometer and the plastic truss that holds the legs together.

2| Measure displacement. Salt the bird, 1 teaspoon Morton Coarse Kosher Salt per pound of meat. You can use a rub, but much of it tends to wash off and burn, and that means you will get only one use out of the oil. We do not recommend it. If you wish you can inject the bird, but that's adding water and it tends to leak out the holes creating steam. We do not recommend it. Now lower it into the pot and fill it with room temperature oil until the bird is submerged at least 1" below the surface of the oil and the oil is at least 4" below the lip of the pot. Remove the bird and place it in a baking pan. Insert a probe rated for 350°F or above into the deepest part of the thigh.

4| Cook. Preheat the oil to 350°F. Do not take the oil beyond 350°F even if you are in a hurry. The temperature will drop quickly when the bird takes a bath in it and then it will slowly build back up. *Turn off the flame and slowly lower the bird in. Then you can turn the flame back on.* Pull up a lawn chair and a good book. Never leave the fryer unattended. Do not put a lid on during cooking. Steam can condense on the lid and water can drip back into the oil and rapidly vaporize and blow off the lid.

5| Is it done yet? Allow 3 to 5 minutes per pound. *Turn off the flame and slowly lift the bird out and spot check the internal temperature.* Dark meat is best at about 170 to 180°F and white meat at 160°F so you can remove the bird when the breasts hit 155°F in the center. When the bird is done, *turn off the flame and slowly lift the bird out and let it drain into the*

pot. Place it in a baking pan. Let it cool about 10 minutes before carving.

THANKSGIVING ON A BUN



Celebrate the tastes of Thanksgiving any time of the year with this delicious blended turkey burger.

Why wait until November to enjoy your favorite Thanksgiving flavors: Turkey, stuffing, cranberry sauce, and sweet potatoes? We bring it all together to create the ultimate Thanksgiving-inspired burger—a turkey and stuffing blended patty topped with sweet potato waffle fries

and tart, tangy cranberry barbecue sauce on a buttery brioche bun!

The best part of it all? By blending the stuffing with the ground turkey, you not only ensure an ultra-moist burger, you also get little bits of crunch from exposed stuffing that gets crispy on the grill.

It's Thanksgiving every day of the year thanks to this moist and flavorful turkey and stuffing blended burger with sweet potato fries and homemade cranberry BBQ sauce.

Makes. 4 servings

Takes. 10 minutes prep, approximately 40 minutes total cook time including stuffing, fries, and burger.

- 1 (6 ounce) box stuffing mix such as [Kraft Stove Top Cornbread Stuffing Mix](#)
- 1 (20 ounce) package frozen waffle-cut sweet potato fries such as [Alexia brand](#)
- 1 (14 ounce) can whole berry cranberry sauce
- 1/4 cup [KC style BBQ sauce](#) *
- 1 1/2 tablespoons brown sugar
- 1 pound ground turkey
- 1/2 teaspoon Morton Coarse Kosher Salt
- [Simon & Garfunkel Rub](#) **
- 4 teaspoons vegetable oil
- 4 hamburger buns, preferably [brioche buns](#)

About the sweet potato fries. If waffle-cut sweet potato fries are not available, feel free to substitute frozen traditional cut sweet

potato fries or, better yet, [our homemade grill fried sweet potato fries](#).

** About the KC style BBQ sauce. Make your own or purchase [Meathead's KC BBQ Sauce](#) in a bottle.*

*** About the rub. Make your own by following the link or permit us to recommend you purchase [Meathead's Poultry Rub](#). If you purchase our bottled rubs, they have salt in them so you do not need to add salt.*

Method

1| Cook the stuffing and sweet potatoes. Prepare the stuffing mix and the waffle-cut sweet potato fries according to the package instructions.

2| Cranberry BBQ Sauce. As the stuffing and fries cook, begin preparing the cranberry BBQ sauce by pureeing the whole berry cranberry sauce in a blender or food processor until smooth. Combine the pureed cranberry sauce, BBQ sauce, and the brown sugar in a small saucepan and simmer, stirring periodically, until the brown sugar has had time to dissolve completely and the sauce is warmed through, about 10 minutes.

3| Make the patties. Combine the ground turkey and 1 cup of the cooled stuffing in a bowl and blend well until the stuffing is evenly dispersed. Reserve the remaining stuffing to serve as a side dish. Divide the burger mixture into 4 even portions and form into patties. Season both sides of the patties with

salt followed by Simon & Garfunkel spice rub. Give them a coating of oil to keep them from sticking to the grates.

4| Fire up. Prepare a grill for 2-zone cooking. Adjust the grill vents to bring the temperature to about 325°F on the indirect side.

5| Roast. Place the patties on the indirect side of the grill, positioning the vent directly above the burgers in order to force the smoke over and around the meat. After about 5 minutes push the tip of a rapid-read thermometer such as a **Thermopen** into the side of both burgers. When the temperature reaches 105°F, flip the burgers and cook for approximately 5 more minutes until they reach 140°F.

6| Sear. Move the patties to the direct infrared heat side of the grill to brown them. Leave the lid up so the heat is concentrated on one side of the burgers. If the fire flares up, move the burger to another spot. Flip the meat every minute to form a nice crust on both sides. Remove the patties once they reach an internal temperature of 160°F.

7| Serve. Begin assembling the burgers by placing a patty on each bottom bun. Top each patty with a generous helping of sweet potato fries. Drizzle the cranberry BBQ sauce over the sweet potato fries and crown the burger with the top bun. Serve immediately with remaining stuffing and sweet potato fries on the side.

TURKETTA: STUFFED AND SMOKED TURKEY BREAST



Italians serve stuffed hogs called porchetta on special occasions. Don't ask what possessed him, but one day Meathead ran with the idea and substituted turkey. He took a bone in breast, removed the skin, boned out the meat, placed the meat on the skin, piled on a stuffing

of dried cranberries soaked in port wine, rolled it up and smoked it. The results, which he calls Turketta, were very special. If you don't like the drunken cranberries, you can stuff it with a bread stuffing, fruit, or whatever moves you.

Makes. 8 to 10 servings

Takes. 1 hour to prepare and 90 minutes to cook

Special equipment. You'll need some kitchen twine to truss the bird.

- 1 whole turkey breast, bone in
- **Simon & Garfunkel Rub** *
- Morton Coarse Kosher Salt
- 1 batch **drunken cranberries**
- 2 medium carrots
- 2 medium onions, skin on
- 2 stalks of celery
- 1/4 cup dried mushrooms
- 1 cup dry white wine
- 1 cup apple juice
- 2 tablespoons dried thyme
- 1 tablespoon dried sage

** **About the Simon And Garfunkel Rub.** If you'd rather not make this rub from scratch you can click this link and buy **Meathead's Amazing Tuscan Herb Seasoning & Dry Brine** instead. It is very similar. Keep in mind that our bottled rubs have salt in them. When using the bottled rub with this recipe, you do not need to add the salt that is called for in the recipe.*

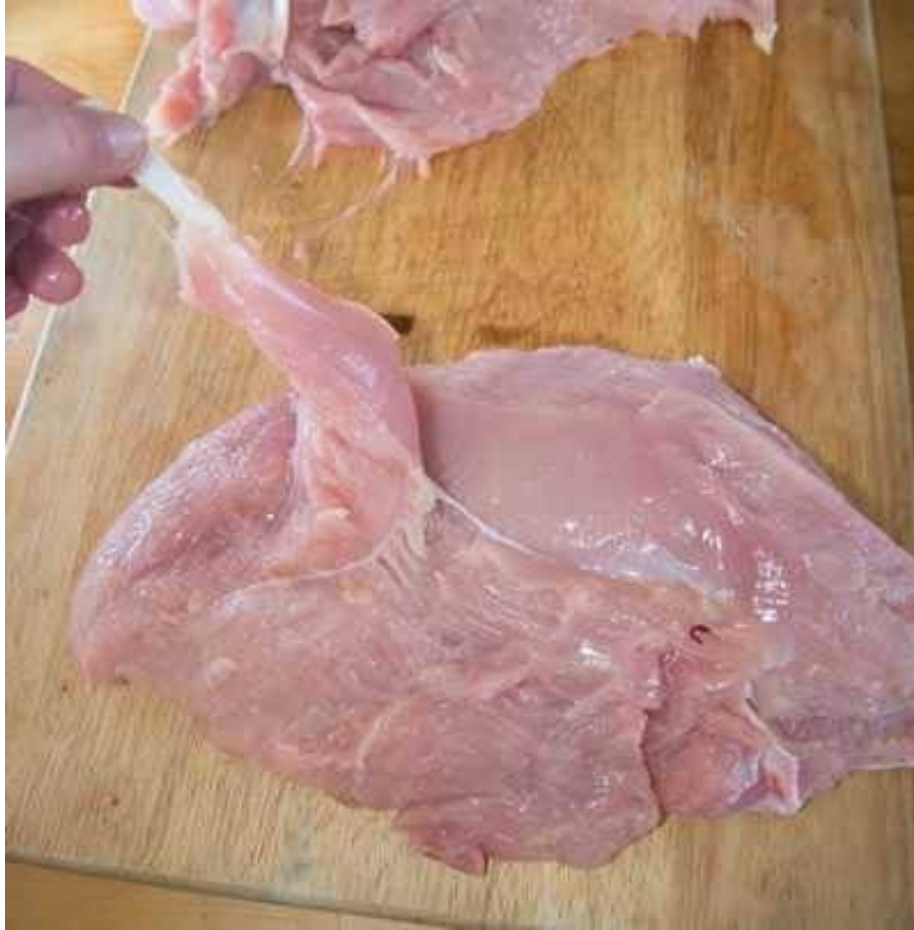


Method

1| Prep. Carefully remove the skin from the breast trying to keep it from tearing.



2| **Rub.** Stretch it out, inside up, on a cutting board and sprinkle the rub on it.



3| Add the meat. Remove each breast lobe from the bones by sliding a flexible knife along the keelbone and down the ribs. We use a **fileting knife**. Then flip it over and remove the tenderloin, a muscle that is loosely attached with a thick tough white tendon in it. Reserve the bones for the gravy fixins.



4| Save the tenderloins for later. Remove the tendon from the tenderloins and freeze them for another meal. The make a great grilled turkey sandwich.



5| Salt. Sprinkle salt on both sides of the meat and place the breast lobes on the skin, thin sides overlapping.



6| Stuff. Pile the drunken cranberry stuffing in the middle. Slip butcher twine under the skin, roll it up and tie it off. Try to cover the ends so the stuffing doesn't spill out.



7| More salt and rub. Once you have it tied, sprinkle on some salt and more rub.



8| Fire up. Chop up the bones you removed from the breast and throw them in a drip pan with any other trim. Peel the carrots then chop the carrots, onions (skin on), and the

celery into 1-inch chunks. Add them to the pan along with the mushrooms, herbs, and wine. Fill it up with water or chicken stock. No salt yet. Fire up your smoker or set up your grill in 2 zones. Place the drip pan under the grate on the indirect side and get the temp stabilized at about 325°F in indirect heat.



9| Cook. Place the meat above the drip pan on the indirect side, add some wood for smoke, and close the lid. When the meat hits about 150°F, lift out the drip pan, strain it, skim off excess fat, taste the stock, boil it down if you want to concentrate it, and season it with salt only after it is the proper richness.

10| Serve. When the meat hits 160°F, remove it and carve it into 1/2-inch thick slices. And don't forget to remove the string! Drizzle some of the drippings on each slice.

SMOKED TURKEY POT PIE



“Chicken pot pie — those are my three favorite things.”

Pablo Francisco

*T*his may be the best pot pie you've ever eaten thanks to the addition of smoked turkey.

There's always leftover turkey. Even when we make smoked turkey, we deliberately make much more than we think is needed so we can make pot pies with the leftovers.

You can make a pot pie by cooking fresh chicken, turkey, beef, or pork, perhaps even boiling them to make stock for the gravy, but to us, it is absolutely the best thing to do with leftover **turkey** or **chicken** or **braised beef short ribs**.

Leftover **pulled pork** is also delicious if it hasn't been soaked in barbecue sauce. Try it with apples, beans or potatoes, and carrots. Frankly, we look forward to the pot pies *after* Thanksgiving almost as much as the big turkey dinner. It is perfect for Meathead's **Ultimate Smoked Turkey** because there is almost always leftover meat and gravy.



Makes. 4 pies, about 2 cups each

Takes. 45 minutes for prep if you have a **pie crust** ready to go. If you make that from scratch, add 15 minutes to make the dough, and 4 hours to chill. About 40 minutes cooking time.

Special equipment. A rolling pin, 4 oven-safe bowls, ramekins, or bean pots, each one with a 2 cup capacity

Filling

- 2 tablespoons butter
- 1 large onion
- 1/3 cup mushrooms
- 1 pound leftover cooked turkey
- 1 cup mixed frozen vegetables
- 1/4 cup water
- 1/2 teaspoon **Simon & Garfunkel rub** or **Poultry Seasoning** *
- 2 crisp apples

Gravy

- 4 tablespoons butter
- 3 tablespoons all-purpose flour
- 2 cups turkey stock or chicken stock

Crust

- 1 single-crust pie dough

** **About the Simon & Garfunkel Rub.** If you'd rather not make this rub from scratch you can click [this link](#) and buy [Meathead's Amazing Tuscan Herb Seasoning & Dry Brine](#) instead. It is very similar. Keep in mind that our bottled rubs have salt in them. When using the bottled rub with this recipe, you do not need to add the salt that is called for in the recipe.*

***About the crust.** You can make your own crust with [Meathead's wife's recipe](#), or buy a frozen pie crust from the store, but don't get one that is sweet or that has been formed to a pie pan and pre-baked. If you decide to make a double crust (bottom and top), be aware that you will need more crust, less filling, and a bit more gravy because the dough will absorb some. Another option is to put puff pastry on the top. You can buy this pre-made.*

***About the turkey and the stock.** Whenever we serve a turkey, we save the carcass. There's always a lot of meat left on it and between the ribs. We simmer it for hours in a big pot with the leftover gravy, and then freeze whatever meat we can pull off the carcass. Read [the sidebar on our Ultimate Turkey recipe above](#) for how to make the stock.*

About the veggies. We usually use frozen mixed veggies, peas, corn, carrots, and beans. The packages usually have lima beans in them, and Meathead throws them out if his wife isn't looking. You can leave them in if you like that sort of thing.

About the mushrooms. Regular old button mushrooms work fine, but you can use others, like portobellos or shiitakes.

About the apples. Try to get a really crunchy apple so it doesn't melt while cooking. Braeburn, Fuji, Gala, Granny Smith, Golden Delicious, or Red Delicious are good choices.

Other add-ins. Celery and potato cubes are common in pot pies. Chop a stalk of celery and add it with the onions and mushrooms. Pre-cook a potato by grilling or boiling it, and then chop it into small cubes. Sweet potatoes are sometimes found pot pies in the South, and turnips are an Old World tradition. We've even seen recipes that call for rice and noodles. Just be careful: they can drink up a lot of gravy. You can add milk or cream to the gravy, or even grate in some parmesan cheese. A splash of sherry or brandy can give a nice edge to the gravy.

Method

1| Make the crust. Follow the recipe for [Meathead's wife's all-purpose pie crust](#), or use your favorite pie crust recipe, or use a premade crust from the store. Put it in the refrigerator to chill for at least an hour. You definitely want a crust on top. You can skip the crust beneath, but I wouldn't. That means you will be making a double crust.

2| Prep. Coarsely chop the onion and mushrooms. Pull or chop the leftover turkey into marble-sized pieces, or smaller. Peel and core the apples and chop into marble size pieces, or smaller.

3| Make the filling. Melt the butter over medium heat in a saucepan. Add the mushrooms and onions, turn it up to medium-high, and cook until the onions are soft and translucent, about 5 minutes. Add the veggies and cook until they are soft, about 10 minutes. Add the turkey, rub, and water and cook until warm. Turn to the lowest setting. Don't add the apples yet. Taste the filling, and add more salt, pepper, or herbs as you feel are needed.

4| For the gravy. While the filling is cooking, melt the butter in a small sauce pan over a medium heat. Add the flour a little at a time and whisk in thoroughly so there are no lumps. Keep whisking until the mixture, called a *roux*, turns amber, but not brown. A roux adds flavor and complexity and thickens the gravy. Turn the heat to high and immediately begin adding the turkey stock in a steady stream, whisking all the while so the roux dissolves. Whisk another minute or 3 until the sauce gets a bit thick, perhaps the thickness of latex wall paint.

5| Preheat. Now's a good time to preheat the oven to 350°F.

6| Filling the bowls. If you're making a double crust, take the dough and cut it into eight equal parts. Spread about 3 tablespoons of flour on a work surface, rub some on your rolling pin, and roll each quarter into a 1/8-inch thick disk, rolling from the center outward. Line the bowls with the

bottom and side crust and cut off any extra at the lip of the bowls. Divide the filling among the four bowls. Then divide the apple chunks among the four bowls. Then ladle the sauce evenly on top of the four bowls.

7| Adding the top crust. Combine all the remaining dough. Dust the work surface with flour again, and cut the dough into four equal parts. Roll it out as before, then place each piece on top of a bowl. You can either let it simply hang over the edge or roll it back until it is resting on the edge and make it look nice by crimping or mushing the tines of a fork down on it. If you want to get fancy you can paint the dough with a thin layer of milk or egg white to help it brown. Poke about 6 small holes in the surface with a fork or an ice pick to let the steam out.

8| Bake. Put the pies on an upper rack where the heat from the top of the oven will darken and crisp up the crust. Put aluminum foil or a pan on the rack below the pies to catch drips. Bake until the crust is golden on the edges and you see steam coming out from under it, about 40 minutes. The actual cooking time will vary depending on how deep your bowls are. Remove from the oven and serve, but don't let anybody take a bite for about 10 minutes or else they will scald the roof of their mouth and talk funny for at least a day.

TURKEY FAJITAS WITH CREAMY AVOCADO SAUCE



“I wish they made fajita cologne, because that stuff smells good. What's that you're wearing? That's sizzlin'!” Mitch Hedberg

The Tex-Mex fave, the *fajita*, is a rolled up sandwich with a tortilla instead of leavened bread, and it is usually made with grilled skirt steak. When Meathead interviewed Bobby Flay in November 2009 about his Thanksgiving plans, the restaurateur, author, and celebrity chef, demonstrated how he makes fajitas with leftover turkey.

Makes. 4 sandwiches

Takes. 30 minutes

- 1 ripe Hass avocado
- 1/4 cup mayonnaise
- Half a fresh jalapeño pepper (optional)
- 1 fresh lime
- Salt and pepper

- 2 tablespoons canola oil
- 1 large red onion
- 1 large red bell pepper
- 1 teaspoon ground cumin
- Small bunch fresh cilantro
- 2 cups leftover shredded turkey
- 4 large flour tortillas

Method

1| Prep. Peel, pit, and chop the avocado. Trim and remove seeds from the jalapeno, then finely dice (you want about 1 teaspoon). Juice the lime. Halve and thinly slice the red onion and red bell pepper. Chop the cilantro and measure about 2 tablespoons.

2| Make the sauce. Combine the avocado, mayonnaise, jalapeno pepper, and lime juice in a blender or food processor add a splash of water and puree until smooth. Season with salt and pepper. Scrape into a bowl.

3| Cook. Heat the oil in a large sauté pan over high heat. Add the onion and pepper and cook until soft, about 5 minutes. Add the cumin and cook for 1 minute. Add the turkey and cook until just heated through; stir in the cilantro.

4| Serve. Place the tortillas on a plate, cover with a damp paper towel and microwave on high heat for 40 seconds to warm through. Put some of the turkey mixture in the center

of each tortilla, drizzle with some of the Creamy Avocado Sauce, roll and eat.

LEFTOVER TURKEY SALAD



*H*ere is another great way to use leftover **smoked turkey**. We share it as a recipe, but you can riff on the ingredients. Don't like blue cheese? Skip it. Hardboiled eggs make a nice addition. Why not smoke the nuts while you're at it? This is perfect for dinner or even as a BBQ side dish.



Makes. 4 servings

Takes. 30 minutes

Dressing

- 3 teaspoons honey
- 1/4 cup **balsamic vinegar**
- 1/2 cup dried cranberries
- 6 tablespoons extra virgin olive oil
- 1/2 teaspoon Morton Coarse Kosher Salt
- Ground black pepper to taste

Salad

- 1/3 cup slivered cashews, almonds, or chopped walnuts
- 4 cups of lettuce chopped into bite-size bits
- 2 cups shredded cabbage, red or green
- 1 crunchy apple
- 1/2 cup **smoked turkey meat**
- 1 1/2 cups crumbled blue cheese

Optional. 4 **hardboiled eggs**, sliced with a slicer or chopped coarsely.

About the lettuce. We often reach for Romaine, but red leaf or green leaf lettuce will work well too.

Method

1| The dressing. Whisk all the ingredients together in a saucepan and warm over a low heat until the cranberries plump, about 5 minutes. Cool in the fridge.

2| The salad. Toast the nuts in a dry frying pan over a medium heat until they are aromatic and start to darken. Watch carefully: they can burn quickly if you walk away. Core the apple and cut it into bite-size cubes. Cut the turkey the same size. Toss everything except the hardboiled eggs (if using) together and divide into four bowls. Top with the eggs and serve.

STUFFING, DRESSING, AND MUFFINGS



Stuffing, purists will proclaim, is the sobriquet used only for that which goes into the cavity. If cooked on the side it is properly called dressing. We are not such sticklers.

We know people who prefer stuffing to the turkey. We're not ready to go that far, but we confess, we often eat equal quantities of both.

So here's a simple but excellent recipe, and with it our favorite variation: Muffings! Stuffing muffins are not only perfectly portioned for your Thanksgiving guests, they also offer plenty of those wonderful crispy edges!

Muffings have some egg as a binder and are baked in muffin pans so they get nice and crispy on all sides. Everyone at your holiday meal gets a Muffing! If you are using this to bake in a large pan on the side, stuff a pork loin, onion, tomato, zucchini or something else, just leave out the eggs. Eggs need to be cooked to 160°F to be safe, but if you leave out the eggs, you don't have to cook it any higher than 135°F.

Secrets for great stuffing

- Start with good bread. The better the bread, the better the stuffing. Go for a rustic Italian loaf or even an eggy challah. Skip the baguette. It has too much crust. But don't eschew crust.
- Amp up the veggies by sautéing, roasting, or smoking them first.
- Use reduced stock. Moisten the bread with low sodium chicken stock rather than water and reduce it to really boost flavor.
- Use the gravy from my [Ultimate Turkey recipe](#), above. Just remove 4 cups from the drip pan while the bird is cooking for the stuffing. No need to reduce that stuff.

- Don't stuff the bird. I explain why here. Either make Muffins or bake the stuffing in a shallow pan so there is more surface on top to get crunchy while underneath it remains chewy. It is like a savory bread pudding.

This recipe was inspired by a recipe from Meathead's former student and teacher, David Rosengarten. He was a student in Meathead's wine classes at Cornell, and he became his teacher when he became a famous chef, one of the first hosts of the FoodNetwork, and author of several cookbooks.

Makes. 12 stuffing muffins

Takes. 30 minutes for prep, 45 minutes to cook

- 3 pounds Italian bread
- 6 eggs
- 8 ounces butter, salted or unsalted (2 sticks)
- 1 1/2 cups finely chopped celery
- 2 cups chopped onions
- 1 cup peeled and chopped apple
- 4 cups low sodium chicken stock or turkey stock
- 1 tablespoon dried thyme (2 tablespoons fresh chopped)
- 2 tablespoons dried crushed sage leaves (4 tablespoons fresh chopped)
- 1 cup dried cranberries
- 1 1/2 teaspoons Morton Coarse Kosher Salt
- 1 teaspoon ground black pepper

Method

1| Prep. Slice the bread and grill it over medium heat (or toast it) to dry it out and bring some nice golden toasty flavor to the party. Watch things closely because they can go from golden to burned in a hurry. Cut it into squares about 1/2" on all sides. Precision not required! Leave the crust on.

2| Melt the butter in a large saucepan over low heat. Add the celery and onions and cook over low heat for 5 minutes. Add the thyme, sage, dried cranberries , salt, and pepper, and cook for only 1 minute.

3| Pour the mixture over the bread. Add the apples and stock. Taste and adjust the seasonings. Take 6 eggs, mix them with a fork in a bowl, and add them to the unbaked stuffing mix.

4| Spread butter thickly in the wells of a muffin pan and press the stuffing in, mounding it high.

5| To cook on the grill. Set up a grill for 2-zone cooking and preheat the indirect side to 325°F (the same temp for cooking your turkey). Cover the pan with foil and bake on the indirect side for about 60 minutes until it is at least 160°F in the center. It should be golden and crisp on top, and firm but not too wet in the center.

6| To cook indoors. Set the oven to 325°F. Put the roasting pan in the middle or on an upper rack. Don't put it on the bottom rack or it will burn. Bake until the temperature in the

center hits a minimum of 160°F and the top starts to brown, about 60 minutes.

EASY SOUTHERN BISCUITS THAT JUST CAN'T
FAIL



“The secret of biscuits is that they are dead simple, and you should be able to make them in your sleep or even in the midst of a blind-drunk hangover.”

— CHRISTOPHER KIMBALL, MILK STREET

Nothing is more welcome on the Thanksgiving table than homemade biscuits. In this recipe we demystify wonderful tawny biscuits, ditch the silliness, and

show you how to get them soft and fluffy inside and crispy on the outside.

We are obsessed with biscuits. We have tried every recipe under the sun. Biscuits are so wonderfully versatile, and surprisingly, they are easy and forgiving. And they can even be baked on a grill with indirect heat! Either way, biscuits are best when served hot right out of the oven/grill.

Biscuits are a rustic bread, leavened by chemistry not by fermentation. There are many recipes out there with countless variations on the ingredients and techniques, and not surprisingly, controversy and nonsense abound over how to make them. Should you use cake flour? All purpose flour? Both? Butter? Lard? Shortening? Bacon fat? Buttermilk? Whole milk? Yogurt? Should they be flaky or fluffy? Can you use a food processor or must you use your hands only? Can you use a rolling pin or your hands only? Knead or not knead? Fold the dough or not? Chill before cutting? We've tried most of these options and discovered the differences are minor. These biscuits are special in that they are really easy to make and get nice and crisp on the top and bottom, yet the center remains soft and fluffy.

Biscuits come in different shapes: Drop biscuits are amorphous blobs usually made from very wet dough. Formed biscuits are cut into rounds, squares, and wedge shapes. I find square cuts easiest to make and eat, and the architecture makes sense from a quality standpoint. Round biscuit cutters squash the dough and you want poofy high dough for flakiness. And round biscuits leave you with cutouts after you cut them. Those cutouts have to be reformed and cut and

then there is more cutout. Reforming the cutouts overworks the dough. And if you like making biscuit sandwiches, square biscuits work best. Finally, with square biscuits there is more surface area for butter!

Many bakers are convinced their method is the only way, and they get downright pedantic. We have discovered that, unlike many other baked goods, there is a fair amount of flexibility in the recipe. If you use a bit too much flour, milk, or butter, it's not the end of the world. Just don't stray too far on the baking soda, baking powder, or salt. Too much of these can send the biscuits to the waste can.

Makes. 9 biscuits, depending on how you cut them.

Takes. About 30 minutes prep time and 20 minutes to cook. Start early: They benefit from a little time in the fridge before cooking.

Special tools. A bench scraper comes in handy but isn't necessary.

- 10 ounces (284 grams, about 2 cups) all-purpose flour
- 2 tablespoons baking powder
- 1/2 teaspoon baking soda
- 2 tablespoons sugar
- 1/2 teaspoon **Morton Coarse Kosher Salt**
- 8 tablespoons (1 stick) unsalted butter, frozen
- 1 cup buttermilk (or substitute, below)

About the flour. Do not to use bread flour. The additional protein in the flour can create chewy biscuits. Weigh the flour for the most

accurate results.

***About the buttermilk and how to substitute.** Most biscuits are made with buttermilk because it is acidic and the acid reacts with the baking soda to create carbon dioxide and that gives the dough “lift,” helping it rise and add airiness and lightness since there is no yeast involved for fermentation. But most of us don't keep buttermilk on hand. To make a cup of buttermilk substitute, pour one tablespoon of white vinegar or lemon juice into a measuring cup and top it off with milk until it measures one cup. Stir them together and let them sit for five minutes. Here's another hack: whisk together half a cup of sour cream and half a cup of water. Yet another hack: take 2/3 cup heavy cream and 1/3 cup sour cream and beat them ‘til fluffy.*

Method

1| Freeze. Toss the butter (in its wrapper) in the freezer an hour or so before cooking. Preheat the oven to 425°F. On a grill, use indirect heat. On a smoker, keep the smoke down.

2| Mix. With a fork, mix the flour, baking powder, baking soda, sugar, and salt in a medium bowl.

3| Divide the butter into a 5 tablespoons chunk and a 3 tablespoons chunk. Keep the paper butter wrapper on the 5 ounce chunk so you can hold it without melting it all over your hands. Roll the paper back and grate the 5 ounce chunk with the large holes on a box grater right into a bowl, then mix in the flour with a fork, a handful at a time, until all the grated butter is coated. This is a brilliant trick that we

discovered reading every recipe we could find. So fast and easy.



4| Pour in the buttermilk and stir it with a fork until the liquid and all the dry ingredients are absorbed. You should have a wet sticky dough. Stick it in the fridge for about 15 minutes.

5| Melt the 3 tablespoon hunk of butter and lightly paint a small baking pan or cookie sheet with it. Either way, thoroughly cover a section about 8 inches square with the butter. Butter the inner sides of the pan as well. When you are done, pick up the pan and look at it to make sure it is thoroughly buttered to prevent sticking. Do not be tempted to use a sheet of parchment paper or a silpat. Butter is crucial to getting a crispy bottom (and for flavor). Set the remaining melted butter aside for painting the top before baking.

5| Toss 3 to 4 tablespoons of flour on your work surface and coat your hands well with flour. Slide the dough onto the

work surface and gently press it into a 6-inch square. It'll be about 1 inch thick. Fold the square of dough in half, flatten it out, and fold it again and again, at least 5 times. This folding creates layers that will bake into a flaky biscuit. You will probably have to re-flour the surface and your hands several times. Then form the dough into a 6-inch square.



6| Cut the dough into 9 squares like a tic-tac-toe board. If you prefer, you can cut them into round biscuits with a biscuit cutter or the rim of a water glass. Or you can make “drop biscuits,” rustic unformed biscuits, by simply ripping off a hunk of dough a bit larger than a golf ball. At this point, you can either bake or freeze the biscuits. To freeze them, stack them between layers of wax paper and slip into a zipper bag or two.

7| Assemble. If you are ready to bake now, put the biscuits one at a time on the buttered baking sheet and push them up against each other. They like to touch, as it makes each biscuit puff up with pride and keeps them from falling over. Don't worry about putting them in the pan in the same place they were on the work surface. But if you have time, pop the pan of biscuits into the fridge for about 15 minutes. Just before cooking, paint their tops with the remaining melted butter. You probably won't use it up, so save the rest for serving. Again, this step of buttering the tops is crucial for the crispy crunch.

8| Bake until golden brown on top, a bit darker on the bottom, and about 205°F in the center, about 15 to 20 minutes if your oven is calibrated. Add an extra 5 minutes or so if they are frozen. After about 7 minutes, rotate the pan for even browning. Serve warm.

Serve your biscuits nekkid, all by themselves, simply buttered, or with butter and molasses, as is traditional in some parts of the South. Jam and/or marmalade make excellent spreads. Or serve them with turkey and all the fixins, with ham and a glaze or **red-eye gravy**, smothered in **sausage sawmill gravy**, made into sandwiches, or topped with a sunnyside egg.

Biscuits also make pillowy toppings for fruit cobblers, pot pies, or chili baked in a Dutch oven. Oh, and if you are going to serve your biscuits with butter, set a stick on the counter when you start the process so it can come to room temp and it will spread more easily.

Try to wipe that grin off your face.

HERE ARE SOME OTHER RECIPES YOU MIGHT
WANT TO TRY WITH YOUR TURKEY DINNER



- **Drunken Cranberries**
- **French Green Beans**
- **Garlic Mashed Potatoes**
- **Grilled Sweet Potato Wedges**
- **Smoked Mashed Sweet Potatoes with Maple and Sriracha**
- **Grilled Hasselback Sweet Potatoes with Maple Pecan Butter Recipe**

PART VIII
CHECK THIS OUT



Here are some goodies from AmazingRibs.com

MEATHEAD'S AMAZING SEASONINGS & DRY
BRINES



BIG. BOLD. FLAVOR



*M*any meals ago, in 2005, my neighbor challenged me to a rib cookoff. I won, got a swelled head, and built a website to share my “secrets.” Now, according to Forbes, Meathead’s AmazingRibs.com is “By far the leading

resource for BBQ and grilling information” and I am in the Barbecue Hall of Fame.

Since I founded the site in 2005 I have shared more than a dozen of our favorite rub and sauce recipes for free, like the ones on the previous pages, and they have become hugely popular. All of them have won big bucks in competitions and been used in restaurants. Finally, after 16 years, in November 2021, we listened to your requests and created three bottled rubs and a sauce under the name “Meathead’s Amazing.” They are based on our free recipes, but have several new ingredients and changes.

Why there is salt in these rubs? When you make rubs at home, we recommend you do not add salt because salt penetrates and none of the other spices and herbs do, so thick cuts need more salt. We put salt in these bottled rubs because all commercial rubs have salt and without salt the price would be outlandish. Also, without salt buyers would wonder why their food needs salt. You can still use these as a dry brine, just sprinkle the rub on well in advance to give the salt time to penetrate. For very thick cuts of meat, we recommend adding a bit more salt. [Click here to order them.](#)

BIG. BOLD. FLAVOR.

Meathead's 

<https://amazingribs.com/flavor>
Free cookbook with purchase

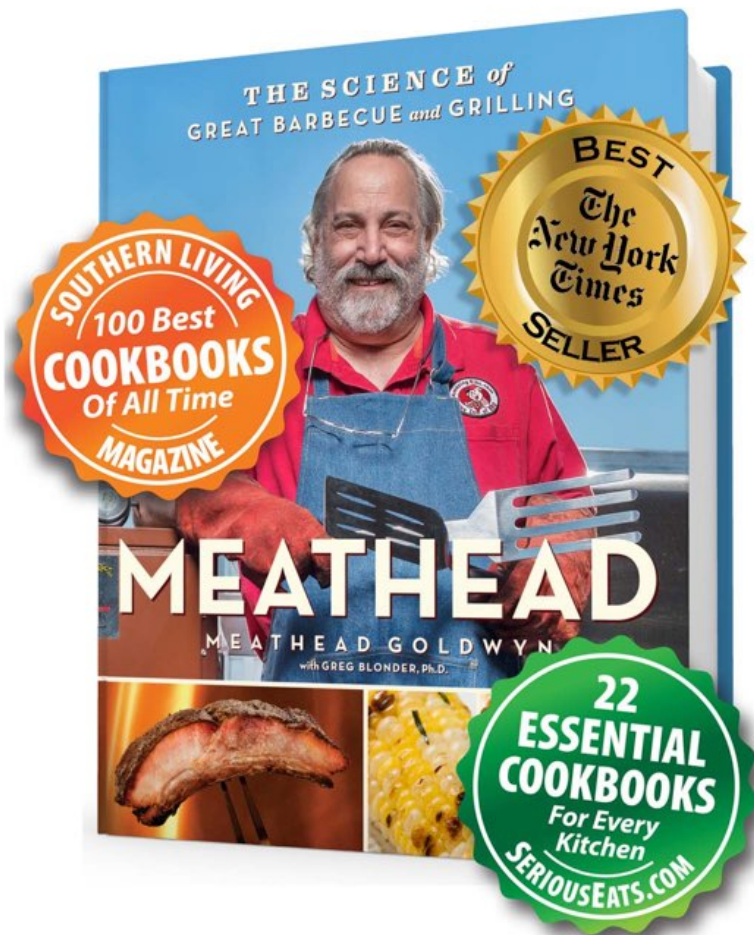
Get a free Deep Dive Guide
with each purchase



***"By far the leading resource
for BBQ and grilling
information" Forbes***

Click to see all 23 benefits you get
when you join
Get 5 Free Pages then
Take a 30-day free trial
No credit card needed

Oh, by the way, members get all
Deep Dive Guides for free!



Meathead, The Science of Great Barbecue And Grilling
"100 Best Cookbooks Of All Time" Southern Living
New York Times Best Seller

3,047 ratings on Amazon ★★★★★



Meatheads
AMAZINGRIBS.COM FOOD TEMPERATURE GUIDE
 "By far the leading resource for BBQ and grilling information" Forbes

Meat / Item	Temperature (F/C)	Notes / USDA Minimum
Beef, Lamb, Venison, Duck Breasts (Steaks, Chops, Roasts)	110-120°F (43-49°C)	USDA Minimum 145°F (63°C)
Blue, "Pittsburgh"	120-130°F (49-54°C)	Dark purple, cool, stringy, slippery, slightly juicy
Rare	130-135°F (54-57°C)	Bright purple to red, warm, tender, juicy
CHEF TEMP Medium Rare	135-145°F (57-63°C)	Bright red, warm, tender, very juicy
Medium	145-155°F (63-68°C)	Deep pink, yielding, juicy
Medium Well	155°F (68°C) or more	Slight pink, some tan, firm, slightly fibrous, moist
Well Done		Tan to brown, no pink, chewy, dry
Pork, Raw Ham, Veal (Steaks, Chops, Roasts)	145°F (63°C)	USDA Minimum 145°F (63°C)
Rare	120-130°F (49-54°C)	Pale pink center, warm, tender, slightly juicy
Medium Rare	130-135°F (54-57°C)	Creamy pink color, bouncy, very juicy
CHEF TEMP Medium	135-145°F (57-63°C)	Cream color, some pink, yielding, juicy
Medium Well	145-155°F (63-68°C)	Cream color, firm, slightly juicy
Well Done	155°F (68°C) or more	Cream color, tough, dry
Chicken, Turkey (Whole Or Ground), Including Stuffing	160°F (71°C)	USDA Minimum 165°F (74°C)
SV TEMP Medium Well	150-155°F (66-68°C)	Cream color white meat, pale tan dark meat, tender
CHEF TEMP Well Done	160°F (71°C)	Cream color white meat, pale tan dark meat, firm
Ground Meats & Raw Sausages	160°F (71°C)	USDA Minimum 160°F (71°C)
SV TEMP Medium	145°F (63°C)	Grill or pan fry these risky meats to 160°F (71°C) and make them juicy by using a 20 to 30% fat blend
Grill or pan fry these risky meats to 160°F (71°C) and make them juicy by using a 20 to 30% fat blend		
Tuna - USDA Minimum 145°F (63°C)		
CHEF TEMP Rare	120-125°F (49-52°C)	Bright reddish purple
Other Fin Fish - USDA Minimum 145°F (63°C)		
CHEF TEMP Medium Rare	125-135°F (52-57°C)	Slightly translucent, flaky, tender
Lobster, Crabs, Crawfish, Shrimp, Scallops	140°F (60°C) or more	USDA/CHEF/SV TEMP When opaque 131°F (55°C)
Hams, Hot Dogs, Precooked Sausages	140°F (60°C) or more	USDA Minimum 140°F (60°C)
CHEF & SV TEMP Warm		
BBQ/Roasted Ribs, Shoulders, Briskets, Legs, Rumps	203°F (95°C)	USDA Minimum 145°F (63°C)
CHEF TEMP Tender, Tugs Apart		
Clams, Oysters, Mussels		USDA/CHEF/SV TEMP When shells open
Leftovers		USDA/CHEF/SV TEMP Minimum 165°F (74°C)

SOUS VIDE (SV) RULES OF THUMB

These times and temps are starting points that will produce meats that please. Experiment!

A - TENDER CUTS

- 1 - Cook.** Salt, then sous vide for 2-4 hours at the temp or left.
- 2 - Optional.** Chill thoroughly in the bag.
- 3 - Rub.** Remove from bag, pat dry, sprinkle generously with salt-free rub or lightly with salted rub.
- 4 - Finish.** Sear in a hot pan, griddle, or on a grill until you like it, or smoke at 225°F (107°C) and then sear. Bring to the temp or left. Glaze or sauce if you wish.

B - TOUGH CUTS

- 1 - Cook.** Salt, then sous vide at 145°F (63°C) for about 24 hours.
- 2 - Optional.** Chill thoroughly in the bag.
- 3 - Rub.** Remove from bag, leave wet, sprinkle generously with salt-free rub or lightly with salted rub.
- 4 - Roast or smoke.** Roast or smoke at 225°F (107°C) until 145-155°F (63-68°C).
- 5 - Optional.** Thoroughly dry the surface. Sear in a hot pan, griddle or on a grill. Glaze or sauce if you wish.

For ratings and reviews of more than 150 accurate, inexpensive digital thermometers and 880 thermometers visit: AmazingRibs.com/thermometers

More info on Meatheads's AmazingRibs.com Version 5.0 Copyright © 2020

Order our Award Winning Food Temperature Guide. This 8.5 x 11" magnet has more than 80 benchmark temperatures for meats (USDA recommended temps as well as the temps chefs recommend), fats and oils, sugars, sous vide, freezer and fridge temps, eggs, collagens, wood combustion, breads, and more.



Click here to sign up for
our free monthly newsletters
and we'll let you know when we publish new
books, new recipes, new science, new product
reviews, new mythbusting, food news from farm to
fork, and a lot more good stuff.



Get all the Deep Dive Guides
From Meathead's AmazingRibs.com
\$3.99 each
Kindle, Apple Books, Kobo, Nook
[Click here](#)