

# FIRE AND SMOKE

Building and maintaining a fire that produces clean, flavorful smoke is the key to great barbecue. Aaron's philosophy is simple: let the wood burn the way it wants to burn. In practice there are a number of unpredictable variables that can make his simple philosophy more challenging than it sounds—anything from sudden changes in weather to logs that aren't as dry and seasoned as you might have thought—but barbecue is about adapting to these conditions as they arise.

The only way to learn how to properly work a fire is to do it as often as you can. Especially when you're first getting to know your smoker, it's a good idea to do trial runs where you're burning wood and generating smoke but there's no meat inside the cooker. Practice during the hottest part of the afternoon and the coolest part of the morning to see how your smoker reacts to differences in external temperature. Try it on days where the weather is calm and pleasant, as well as days that are rainy or windy. Experience breeds confidence.

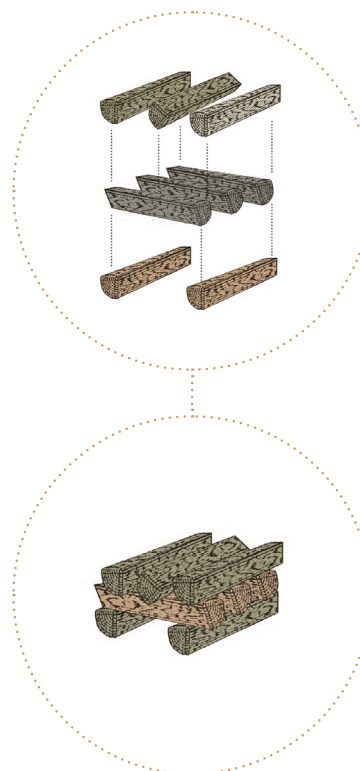
## Building a Fire

In the early stages of the fire, your only real concern is getting the smoker up to temp and establishing a solid bed of coals that will continue to fuel the fire for many hours. You don't need to worry about the quality of your smoke until there's actually food in the smoker, so hold off on using heftier pieces of wood that will burn longer and produce more flavorful smoke.

When building a fire, you want to combine thinner, drier pieces that will quickly catch with denser logs that will burn slower and generate heat over a longer period of time. The arrangement of your logs should maximize air flow. Start by placing two dense logs on either side of your firebox as a foundation, then three drier pieces of wood perpendicularly across the top, leaving at least an inch of space between each piece. Place another dense log across the thinner ones and a lighter piece on either side, again with an inch of space between. You should now have three distinct layers forming a basket weave-type pattern.

To ignite, moisten a crumpled sheet of butcher paper with a drizzle of cooking oil (like grapeseed), slide it between the two bottom logs, and light. (If you have a piece of greasy butcher paper lying around from a previous cook, use that.) Newspaper and kindling are also fine alternatives, but avoid using

### WOOD DIAGRAM



petroleum products like lighter fluid. As the fire grows and the logs catch, the middle layer of thinner, drier wood should catch first, eventually collapsing into coals with the uppermost log falling on top. (Alternatively, you could light charcoal in a chimney starter and add them to the firebox, followed by pieces of wood.) Whatever tinder you use to start the fire, make sure you add enough to keep the fire burning while you wait for the heftier logs to catch.

If you're having trouble getting the logs to catch, try rearranging them with a poker or shovel to give them more space and facilitate airflow through the structure. You can also add smaller pieces of kindling to help the fire build. If the logs are producing a lot of smoke without catching, they may not be dry enough. Try carefully replacing a few of the bigger logs with thinner, drier pieces and see if it makes a difference.

## Clean Fire, Clean Smoke

The temperature gauge on your smoker will indicate how hot the fire is burning, but if you want to know how clean it's burning, look at the smokestack.

Wood produces its best, cleanest smoke after it fully combusts and catches flame at temperatures in excess of 600°F. On your way to clean smoke, you'll be burning off moisture, gases, and oil-soluble chemicals in the wood, eventually reaching the optimum stage where most of your smoke is water vapor. As that vapor moves through the smoker, it settles on the surface of the meat and then evaporates, leaving behind traces of compounds like syringol and guaiacol, which give barbecue its flavor and aroma.

If you have a clean fire, the smoke from your smokestack should look thin and light with a bluish hue. What you don't want is smoke that's thick and sooty or gray-black. The heavier and dirtier the smoke looks, the more particles like creosote it contains. If you've ever eaten a piece of brisket that tasted like the inside of an ashtray, creosote was likely to blame. Meat doesn't need a lot of smoke. What it needs is the right smoke.

To get that perfect smoke, you first want to make sure you have a supply of good quality wood, but you also need to create the conditions where combustion can happen in a natural, organic way.

Over the course of a long cook your meat can survive short periods of bad smoke, provided you fix the problem as soon as it emerges. As for why you're getting bad smoke, it could be that your wood didn't cure long enough or was recently soaked by rain, in which case it's going to take a lot more time and heat to burn off the extra moisture and reach full combustion. Maybe you've buried a new piece of wood too deeply in the coals, or the door or dampers of your firebox aren't open far enough and the reduced airflow is keeping the wood from catching flame. Or maybe you have too much airflow and the fire is too intense, which can cause residue and other nonwoody particles inside the firebox to burn off and mix with the smoke from your wood.

Your job for the duration of the cook is to keep an eye on the smokestack and make adjustments as needed along the way.

## Working the Fire

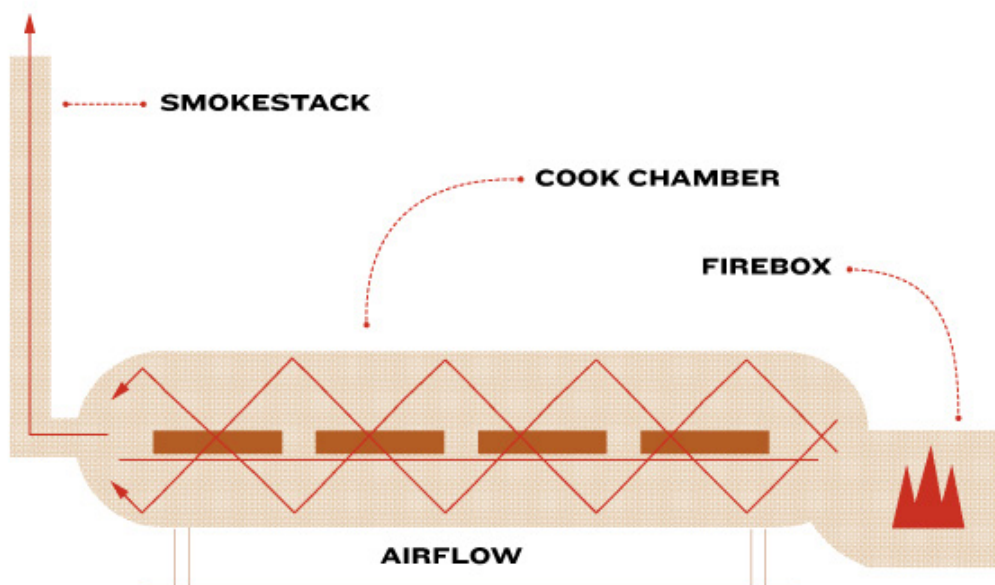
Once your food is on the smoker, your primary job is to keep the temperature steady and the smoke clean. Every time you pick up a new log to add to the fire, try to anticipate its heat curve. How quickly will it catch? How much heat will it generate? And how fast will the heat dissipate? The heat curve of a thinner, drier piece of wood is much steeper than a thicker, denser piece. In other words, a thin piece of wood will catch quickly and burn fast. Ideally when you add a new piece of wood, you're timing things such that the new piece will approach the peak of its heat curve just as an older piece is starting to burn out. That will help keep your cooking temperatures level rather than oscillating between too hot and too cold.

The early stages of a cook are the most critical—that's when the meat is going to take on the most smoke and flavor. Try to use your heftier, denser logs in the first three hours after your meat goes in the smoker—they'll burn longer after combustion and produce the most flavorful smoke. Save thinner, drier pieces that will burn out more quickly for later, once you've wrapped the meat and you're trying to maintain temperatures rather than add flavor.

If at any point your fire starts burning too hot, resist the temptation to cool it off by shutting the firebox door. Suddenly choking off oxygen will kill the fire and you'll end up having to build it back up, creating more extreme temperature variations and dirty smoke. Instead, try removing a log with a shovel and letting the fire cool naturally for a minute. Aaron recommends leaving the firebox door fully open at all times unless the weather turns cold, wet, or windy. Even then, his preference is to move the cooker (if possible) so the firebox is shielded from the elements. If you have no choice but to shut the door, leave it open just enough to protect the fire but not so much that it's stifled. You can also rake some of your coal bed close to the firebox door so the colder, wetter air outside heats up as soon as it enters.

Conversely, you should never force air into the firebox. If the fire seems to be petering out, a few good puffs of breath are more than enough to get things going again. If one log in particular seems like it's having trouble catching, make sure there's room for air to flow between the wood and the coal bed beneath it. Use a shovel to dig a divot under the wood, if necessary. Once the log has fully combusted, you can safely bury it in the coals to make room for new wood.

### AIRFLOW IN OFFSET SMOKERS



# SMOKERS

Aaron barbecues exclusively on wood-burning offset smokers and as such they're the focus of this class. If you're using a different kind of smoker, especially one that runs on charcoal or gas, you will need to make adjustments to the cook times and temperatures he provides.

## COOKING METHODS

All smokers fall into one of two broad categories: direct heat and indirect heat. The difference between the two is illustrated in Aaron's steak and broccolini cook, where he establishes different temperature zones on his grill by arranging lit coals under just one half of the grate. It allows him to alternate between direct and indirect heat simply by moving the steak from one side of the grill to the other.

The same basic principle applies to smokers. If you're using an offset smoker like Aaron's, then your cooking method is always going to be indirect. If, on the other hand, your smoker is designed with the heat source directly beneath the grate, you're cooking with direct heat. Neither is better or worse than the other; in fact, you'll find both are used at barbecue restaurants throughout Texas. The main thing with direct heat is making sure there's enough space between your fire and your food. Put them too close together and you'll end up grilling rather than barbecuing.

## FUEL SOURCES

Smokers can also be categorized according to how they generate heat. Aaron firmly believes that the best, most authentic central Texas barbecue is cooked on smokers that generate both their smoke and their heat exclusively from burning wood. That's not to say you can't make great food on a smoker that runs on charcoal or gas. It's just fundamentally different from the style of barbecue Aaron cooks.

### Stick Burners

As the name implies, these smokers (like the offsets Aaron uses) rely solely on wood as their fuel source. They require near-constant attention during the cook and also have a steep learning curve.

High quality offset smokers like Aaron's are often custom made with heavy-duty materials and quite expensive. His cook chambers, for instance, are recycled propane tanks. If you know how to weld or know someone who does, you can find instructions for building an offset smoker in Aaron's book, *Franklin Barbecue: A Meat Smoking Manifesto*. There are also prefabricated models available from manufacturers online.

Inexpensive offset smokers sold at hardware and department stores are notoriously flimsy, leaky, and bad at retaining heat, but they can work with a few meaningful modifications. Aaron cooked his first brisket on an offset smoker he bought for \$100 at a sporting goods store. With or without the modifications mentioned below, a cheaper smoker can absolutely get the job done. You'll build experience with each cook and decide for yourself if and when you need to upgrade to a more expensive model.

### Charcoal Smokers

This category includes bullet smokers (like the Weber Smokey Mountain), ceramic kamado ovens (like the Big Green Egg), and drum smokers (like the Pit Barrel Cooker). While not totally hands-off, charcoal smokers don't require nearly the level of attention as a stick burner. Once the coals are lit, you adjust the temperature with built-in dampers that control airflow. While most of the smoke comes from the charcoal, you can add wood chunks or chips for extra flavor, but because the wood smolders rather than combusts, its smoke isn't quite as clean and flavorful as the smoke from a stick burner can be.

## Pellet Smokers

Like a kitchen oven, a pellet smoker is thermostatically controlled. Plug it in, set the temperature, and the smoker does the rest, automatically feeding pellets of compressed sawdust into a fire pot to combust as needed for smoke and heat. Pellet smokers are easy to use but the advanced tech also means they're breakable in a way other smokers aren't. And while pellet smokers have their proponents, Aaron personally believes a live, active fire can make the difference between barbecue that's great and barbecue that's merely good (or even bad).

## Gas Smokers

Gas provides consistent cooking temperatures but doesn't produce smoke, so the addition of wood in the form of chips or chunks is mandatory for barbecue. For longer cooks, make sure you have multiple tanks of propane on hand, as a single tank might not suffice.

## Electric Smokers

An electric smoker uses wood chips, water, and a heating element to produce smoke rather than an open flame, and the lack of combustion gives its smoke a much different flavor than a live fire.

## Kettle Grills

The live-fire cooking apparatus that home cooks are most used to seeing (and owning) is the standard kettle grill. Kettle grills aren't really built for slow smoking, but they will absolutely work if you approach them thoughtfully. You'll need to set up the grill for indirect heat by restricting the charcoal to one side of the grill. (Aaron demonstrates this in Chapter 6: Grill: Steak and Broccolini.) Your smoke will come from wood chunks or chips that you add to the charcoal. Make sure you have a thermometer set up close to where the meat sits in order to get an accurate temperature reading.

## MODIFICATIONS

### Temperature Gauge

One of the easiest and most common modifications to make, this could be as simple as swapping out the factory part that came with your smoker for a dial that's bigger or more to your liking, or even installing a WiFi-enabled device that allows you to keep track of the temperature from inside your house.

You may also realize over time that the temperature gauge is situated too close to your fire or too far

from where you normally place your meat. If so, drill a hole and install another gauge wherever you want it. Having multiple gauges at different ends of the cook chamber also comes in handy if you regularly cook multiple briskets or racks of ribs at the same time.

### Water Pans

Adding warm water to a container inside the cook chamber adds moisture and humidity to the environment, which can help keep the meat from drying out. A disposable aluminum pan is all you need.

### Drip Pans

Over the course of a long cook, your meat is going to drip grease and rendered fat into the bottom of your cook chamber. It's messy and can turn rancid if it isn't dealt with. It's also a fire hazard. Some smokers come equipped with a drain or drip pan already installed, but if not, you can add a large, shallow pan beneath the grate of your smoker. Even a disposable aluminum pan will do in a pinch.

### Baffle Plates

An offset smoker cooks food via convection, pulling air from the firebox through the cook chamber and then out the smokestack. Air and smoke is hot when it leaves the firebox, and because heat rises, the air and smoke naturally wants to rise to the top of the cooking chamber. If, on the other hand, you install a steel baffle plate right where the air and smoke enter, you effectively guide the flow of the smoke, forcing it down before it eventually rises up, thus distributing the heat and smoke more evenly. You can permanently install a baffle plate or even just insert temporary piece of metal at the opening.