



HSBBQ Competition Rules

The following rules are to be strictly followed at every HSBBQ event. All competitors, teachers, mentors, and adults should be familiar with every rule. These rules are for the safety of all participants and anyone attending the events, including students, teachers, mentors, board members, youth, and adults.

TEAMS

1. Teams are made of high school students enrolled in high school grades 9th - 12th and consist of least 1 and no more than 5 students.
2. Teams are to have a teacher or HS staff member (with the high school email address) in charge of the team who also travels with them under their ISD rules.
3. Mentors must be approved by the HS or District (depending on their rules) and can be the teacher, a competition Pitmaster, a parent, a previous team member who has graduated, etc.
4. Teams must have 1 Class ABC fire extinguisher on-site at each competition.
5. Alcohol is not permitted at any time. This includes being in the recipe of any product.
6. There is to be no like-meat brought to a competition that is the same as the competition meat. (i.e., examples of meat approved for lunches include chicken legs, hamburger patties, hot dogs, and sausage.)
7. Prepping of ingredients may not happen before 6:00 a.m. Saturday morning. Prepping in the hotel room, Friday, is not allowed (no cutting/mixing/measuring of any ingredients). Prepping before 6:00 a.m. Saturday is considered cheating and cause for disqualification.
8. Campers/RVs of any type are not allowed on-site, or near the competition site, during Regionals or State by schools, teachers, parents, mentors, family members, guests, or any other persons who are not members of the High School BBQ, Inc. Board.
9. Box trailers made/built for catering and/or BBQ competitions are allowed, but windows and doors must remain open at all times and are subject to inspection by HSBBQ Board Members or their designated persons at any time. Box trailers made for transport are to be parked with vehicles after unloading.
10. There is to be no staying/sleeping on-site overnight at Regionals or State by HS students, teachers, mentors, or team parents/adults/siblings, etc. ****NO RVS ARE ALLOWED****

COOKED ON SITE

1. All categories will be prepared/made and cooked on-site during the competition. See each category for individual rules.
2. Schools with more than 1 team will not share finished products to turn in for judging (for example, slices from the same brisket) and should have different dessert recipes.
3. You can use gas or electric starters or torches to start the wood for your pit, but **you may not use them to cook, brown, or finish meat products, or desserts.**
4. ALL meat products are to be cooked on wood products from start to finish.

COOKING AREA



1. The cooking area will be approximately 20' x 20'. **The area will be roped/taped off and only students will be allowed to be in this area while the competition is taking place, which begins with the meat pick-up at 6 a.m. until 3:10 p.m.**
2. All adults must remain behind the rope/tape until **ALL TEAMS** have turned in their brisket (approx. 3:10 pm). **Violators of this rule could disqualify their team.**
3. No adults will be allowed in the cooking area once the competition has officially started. If an adult, or any part of an adult (arm reaching over), enters the cooking area during the competition the team may be disqualified from the competition. **The only exception to this rule will be in the case of an emergency.**

SANITARY CONDITIONS

1. The team must maintain their cooking area in a clean and sanitary condition and follow safe food handling procedures.
2. An HSBQ board member or designee may disqualify a team for unsanitary conditions or entries.

TURN IN TIMES

Prior to the competition, the HSBQ Board will determine the turn-in times. The turn-in times will be sent to teams in the Regional information email and announced during the Cooks Meeting.

Standard turn-in times for competing are:

- Dessert – 9:00 am
- Beans – 10:30 am
- Chicken – 12:00 pm
- Ribs – 1:30 pm
- Brisket – 3:00 pm

INSTRUCTIONS FOR MEAT TURN IN

1. All meat will be furnished on the morning of the competition and will be prepared from scratch with the time constraints of the competition.
2. THERE IS TO BE NO LIKE-MEAT BROUGHT TO A COMPETITION THAT COULD BE MISTAKEN FOR COMPETITION MEAT. THIS WILL RESULT IN DISQUALIFICATION. (Examples of meat approved for lunches would be chicken legs, hamburger patties, hot dogs, and sausage)
3. No pre-marinating, pre-soaking, or pre-spicing prior to the official start time is allowed.

MEAT

- **Chicken** – Each team will turn in a whole 1/2 chicken that is cut in half, fully jointed with skin on, and meat side up. The wing tip may be on or off. The chicken must fit in the tray with the lid closed.



- **Ribs** – Each team must turn in seven fully cut-apart pork spareribs. The ribs must be placed in the tray horizontally and accordion-style from the hinge side of the box down.
- **Brisket** – Each team will turn in seven full slices, with the ends on and no thicker than 3/8” and no thinner than 1/4”. The brisket must be placed in the tray horizontally and accordion-style from the hinge side of the box down.

No meat will be allowed to leave the team’s site area.

MARKERS AND GARNISH FOR THE MEAT

- When preparing meat products for turn-in, *nothing may be added to the meat after it has been placed in the tray.*
- While at the Turn In table, if needed the team will be instructed to correct their turn-in, if sauce or juice is added to the meat the team will be given a paper towel to soak it up.
- All garnishes are prohibited.
- Do not mark on the box, the ticket, or the foil in the box. Foil cannot be folded, torn, etc.

PINTO BEANS

1. Beans will be started at the competition site from dry pinto beans.
2. Each team must use only dry pinto beans but may add additional ingredients.
3. After the Cooks Meeting, beans may be soaked in **WATER ONLY**, overnight. *No additional ingredients may be added to the beans until 6:00 AM Saturday morning.* Doing so may disqualify the team from the bean entry and/or from the competition.
4. Once the beans are put into the turn-in cup, all additional ingredients must be smaller than the diameter of a dime or small marble.
5. No markings on the cup, ticket, is allowed.

DESSERT

1. Must be prepared from scratch and cooked on-site. ****NO BAKE ITEMS ARE NOT ALLOWED****
2. Schools with multiple teams may not use the same recipe for the team. Each team must submit a different recipe.
3. Recipe must contain at least 5 individually purchased ingredients
4. Recipe must be made from scratch, except for the crust, which can be chosen from the approved item list (See list for approved items).
5. No cake mixes, cookie mixes, or pre-made mixes/fillings will be allowed,.
6. **No puddings or custards of any type are allowed**
7. No premade icings/pastry cremes/whipped toppings/toppings, etc. These items must be made from scratch.
8. Hand-made, on-site tortillas must be made from scratch
9. Fresh fruit must be used.
10. Canned/jarred, jellied, or frozen fruit may not be used. (For example, maraschino cherries or other jarred fruit.)
11. Dried fruit (*raisins, cranberries, etc.*) are allowed as a garnish.
12. Powdered/dehydrated fruit is not allowed.



13. An accurate recipe must be submitted with each entry. The recipe must include its proper name, prep & cooking times, ingredients & method (i.e., We cooked it on the pit; We used a propane oven...). **Put the following in the UPPER RIGHT-HAND CORNER: Prep Time; Cook Time; How it was cooked (pit, propane oven, dutch oven, etc)**
14. Place the PRINTED (**not handwritten**) recipe in a Ziploc bag and bring it when you turn in your entry. *DO NOT WRITE* the team's name, school, or anything on the baggie or the recipe.
15. Do not tape the recipe to the container.
16. Decorative paper is not allowed. You may use the tinfoil provided if it is needed.
17. Garnishing is allowed in this category. Topping items (such as cookie/candy crumbles which are placed on top of a dessert) may be used to garnish BUT DO NOT COUNT AS PART OF THE 5 INGREDIENTS
18. **NO PRE-MADE DESSERTS ARE ALLOWED. This includes, but is not limited to:**
 - Pies
 - Cakes
 - Cupcakes
 - Cookies
 - Brownies

ADDITIONAL DESSERT ITEMS NOT ALLOWED ARE:

- Canned pie fillings
- Canned pastry fillings
- Canned or packaged whipped cream
- Puddings (**of any type**)
- Premade icings/pastry cremes/whipped toppings, etc.
- Chocolate, caramel, etc., drizzles may not be canned/jarred. (Example: Ice Cream/Dessert toppers)
- Canned fruit, fruit in a jar, frozen fruit, dehydrated fruit...
- Canned (pre-made) Crescent Rolls or Biscuits ****These do not qualify as "pie crusts" as approved below****
- Pre-made Tortillas

APPROVED PACKAGED (PRE-MADE) ITEMS TO BE USED FOR CRUSTS:

- Pillsbury Pie Crusts (Other brands comparable to this are acceptable.)
 - The pie crust must be unrolled and hand-formed into a pie pan.
 - Piecrust cannot be purchased pre-formed in a pie pan.
- Honey Maid Graham Crackers (Other brands comparable to this are acceptable.)
 - Graham crackers will be crushed to make a crust and hand-formed into a pie pan.
 - Graham cracker crust cannot be purchased pre-formed in a pie pan.
- Pepperidge Farm Puff Pastry Frozen Pastry Dough Sheets (Other brands comparable to this are acceptable.)
- Dynasty Egg Roll/Spring Roll Wrappers (Other brands comparable to this are acceptable.)



*Bread Pudding Clarification: ***BREAD PUDDING IS NOT A PUDDING.****

An authentic traditional Bread Pudding with fresh fruit will take nearly two hours to make from scratch. If it does not then please choose a different recipe or make the bread on site.

Pudding refers to a type of dessert. Traditionally the Brits use the word "pudding" for what Americans call "dessert".

WOOD FIRE

1. All fires for cooking meat must be wood or a wood product.
2. ALL meat products are to be cooked on wood products from start to finish.
3. You can use gas or electric starters or torches to start the wood, but you **may not use** them to cook, brown, or finish meat products.
4. Once the meat has been placed in the pit, you may not restart your fire with gas or electric starters/torches.

PIT OR SMOKER

1. Any commercial-made, homemade or shop-made pit may be used. All pits must use only wood or wood products.
2. Pellet smokers and guru-style fans are **NOT** allowed for HSBBQ competitions.
3. **Teams may NOT share a pit/smoker.** A school may have two pits/smokers on one trailer, however, there must be a separation of areas for the two teams using the pits/smokers to work. No combined workspace is allowed.

JUDGING FORMAT

- A taped ticket will be affixed to the top of each tray.
- Once in the judging area, each tray will be assigned a box number and to a table. Entries will be judged by at least five judges who are 18 years of age or older.
- All entries will be judged on their appearance, taste, and texture.
- Single-Round Judging – The scores will be used to determine category placement. Once all five competition categories (dessert, beans, chicken, ribs, and brisket) are scored, the computer program will add the scores together to determine overall placement.
- Damaged trays may be returned to an HSBBQ Board Member or representative for replacement *ONLY if the original ticket is attached.*
- If the ticket is lost, the ticket will not be replaced and the team will receive a score of zero for that category.

DOUBLE BLIND JUDGING

- All entries will be submitted in identical containers which have been assembled and brought to the site by HSBBQ. The container for dessert, chicken, ribs, and brisket is an approximately 9" x 9" hinged Styrofoam tray.



- Each team will be provided a piece of foil for each turn-in by HSBBQ and may not be substituted with any other foil. The foil supplied is to be placed in the bottom of each tray. You may choose not to put foil ONLY in the dessert tray. However, all meat categories must have foil in the bottom of each tray.
- A Styrofoam cup and lid will be provided by HSBBQ for the beans.

TIE BREAKER

- Brisket will be the first tiebreaker. If there is a tie in points, the team that finishes higher in the brisket category will be placed higher. If there are still ties then the ribs will be the next tiebreaker; then chicken; then beans; and finally the dessert.

TURN-IN WINDOW

1. There will be an additional 10 minutes before and 10 minutes after the turn-in time. This allows each team time to have their product checked in and correct any mistakes before the window closes.
2. If a team misses the window, the product will not be accepted and will not be judged.

CONDUCT

1. All teams, teachers, mentors, and parents will be expected to conduct themselves in a friendly, courteous, and professional manner.
2. Any team, teacher, mentor, or parent who does not conduct themselves professionally may be given one warning and then disqualified and possibly expelled from future competitions. This includes disrespecting or speaking ill of other teams, students, mentors, teachers, HSBBQ board members, judges, or anyone on site.
3. Cheating will result in disqualification from a category or the competition. A team may lose their State qualification and must re-earn the opportunity to attend State. The HS's Principal will be notified of why the team was disqualified and the HSBBQ Board's decision for the infraction.
4. Adults who do not follow the rules can also disqualify the team, or the adult may be removed from the competition and asked to stay off-site until the awards are over.
5. The outcome of the decision by the HSBBQ Board is final.

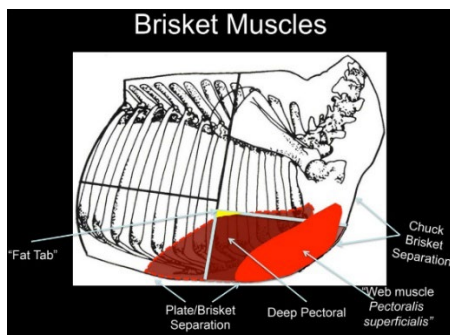
STATE CHAMPIONSHIP ONLY

- *Coaches, mentors, and all other **adults will not be allowed within 20 feet** of the cooking area* after the meat pick-up has begun at 6:00 a.m. and must remain away from the cooking area until ALL TEAMS have turned in their brisket (3:10 p.m.).
- The purpose of this rule is to let the students work independently of their coaches/mentors.
- All teams are responsible for their site. Trash must be picked up and placed in the dumpsters, and the area (asphalt, gravel, etc.) must be free of trash and ashes PRIOR to the awards.
- Board members or their representatives will police the area to ensure everything is clean before the awards ceremony. Awards will not take place until the grounds are clean.

120 - Beef Brisket, Deckle-Off, Boneless

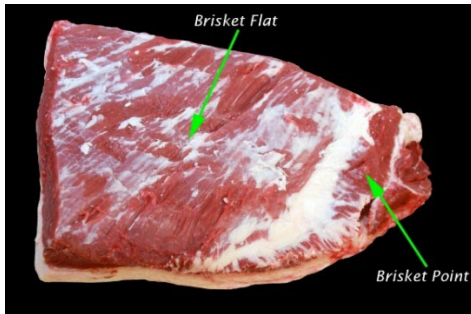
TAMU Meat Science

The brisket is the beef primal most associated with Texas barbecue. It also tends to be the most difficult cut for most people to prepare and consistently produce a tender, juicy, flavorful end product. Briskets are removed from the forequarter of a beef carcass cutting in a line parallel to the backbone through the cartilage in the juncture of the first rib with the sternum bone, continuing the cut across ribs 2-5 (see the diagram below). After cutting through the ribs and the muscles immediately lateral to the ribs, the brisket can be removed by cutting through the natural seam between the remaining muscles. After removal from the forequarter, the remaining portion of the rib and sternum bones are removed along with a layer of fat located immediately underneath, commonly referred to as the “deckle.” A “packer trim” brisket is typically considered one still in the vacuum package as it was delivered from the packer with minimal trimming, especially to the subcutaneous (outside) surface. Today, many briskets are further trimmed to no more than .25 inch of fat before seasoning.



Skeletal Diagram of a Beef forequarter showing where the brisket is located.

The brisket typically contains parts of two major muscles. The *deep pectoral* muscle is located on the most interior (medial) surface of the brisket. The conventional method for fabricating briskets includes severing this muscle by making a cut between the 4th and 5th ribs, however, many briskets today have even more of the posterior portion of the *deep pectoral* muscle left on the brisket, and the brisket may be cut more ventrally to make a longer narrower style. The *superficial pectoral* muscle is located on the exterior (lateral) portion of the brisket and typically has more fat associated with it than the *deep pectoral* muscle.



Brisket showing location of point and flat

If a brisket is separated into two portions, they are typically referred to as a brisket flat and a brisket point, however, the definition of these two portions as a retail or foodservice cut is different in different locations. In some presentations, the brisket may be cut into two equal sized (length) pieces by a single knife cut across the brisket. The cut surface on each half will generally have both major muscles exposed, although the cut will have a majority of one muscle or the other depending on whether it is the anterior or posterior end.

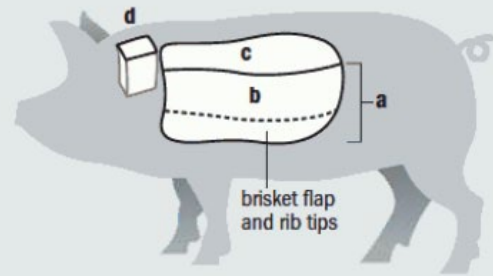
The two muscles (*deep* and *superficial* pectoral) may also be separated by following the natural seam between the muscles to make a 120A Beef Brisket Flat and a 120B Beef Brisket Point. Both muscles will be somewhat irregular in size and shape when separated in this manner.



Vacuum Packaged "Packer Trimmed" Brisket

Classifying pork ribs

Pork ribs come in a variety of styles, determined by the part of the pig where they originate. Different ribs are cooked for different lengths of time, depending on the size and tenderness of the meat, and the amount of connective tissue.



a. Spareribs

Spareribs are cut from the bottom portion of the ribs. With longer bones, they have less meat than baby backs – but a superior flavor, according to many people.



b. St. Louis-style ribs

A subspecies of spareribs, St. Louis-style ribs omit the rib tips and brisket flap of spareribs – yielding slabs of a uniform shape.



c. Baby back ribs

The most popular ribs in the United States, baby back ribs are cut from the top portion of the rib cage. They have more meat and take less time to cook than spareribs.



d. Country-style pork ribs

Country-style ribs are thickly cut, sometimes from the loin but usually from the shoulder. Some folks consider them chops, not true ribs.



A Guide to Making a BBQ Rub - The 5 Ss

When it comes to a good BBQ rub, it's all about the five Ss. Think of it like a symphony orchestra, where each instrument plays a vital role in creating a harmonious masterpiece. If you're looking to up your BBQ game and impress your guests with mouthwatering flavor, a good BBQ rub is a must-have. A BBQ rub is a combination of herbs, spices, sugar, and sometimes salt that is rubbed onto meat prior to grilling or smoking. But what makes a good BBQ rub? So, what are these five Ss, you ask?

Sugar

Sugar is a crucial ingredient in BBQ because of the sweet taste it imparts to the meat and the creation of a caramelized crust, also known as the "bark." This bark is formed when the sugar melts and caramelizes upon exposure to high heat, creating a mouthwatering outer layer that enhances the meat's flavor, texture, and appearance. Sugar also plays a balancing role by offsetting the spiciness of other ingredients in a BBQ rub and creating a more complex and well-rounded flavor. However, using too much sugar can lead to burning and an overly sweet taste, so it is essential to use it in moderation. With the proper balance of sugar and other spices, a BBQ rub can elevate the taste of your meat to a whole new level, delivering a truly satisfying experience.

Savory

Savory is the umami taste derived from amino acids is a crucial component in BBQ, as it adds a layer of complexity and richness to the meat's flavor. This savory taste comes from glutamate, a naturally occurring amino acid found in meat, mushrooms, and other food items. As the meat is cooked over high heat, the proteins break down and produce this savory flavor, known as umami. To enhance this taste, ingredients such as soy sauce or Worcestershire sauce, which are high in glutamate, can be added to the BBQ rub. The addition of these savory flavors can also help to balance out the sweetness or spiciness of the rub. In summary, the incorporation of savory flavors from amino acids is essential in achieving a well-balanced and delectable BBQ experience.

- Onion powder – versatile but pungent flavor and odor.
- Garlic powder – staple flavor.
- Cumin – aromatic with nutty flavor
- Mustard powder – strong pungent flavor.
- Oregano – strong pungent flavor and odor
- Rosemary – lemon/pine flavor and highly aromatic
- Sage – slightly bitter with a musty mint flavor.
- Thyme – slightly pungent with a mint/lemon flavor and aroma.
- Basil – pungent, licorice/clove flavor.

Spicy

Now, let's add some heat with the spicy S. Hot pepper sensations, often called spicy flavors, can add excitement to your BBQ dish. But, be sure to use them in moderation, as not everyone enjoys a lot of heat. Black pepper, cayenne, and chipotle are all great options to consider.



When it comes to spicy flavors, there are countless options to choose from. You can go for classic options like cayenne pepper, chili powder, or black pepper, or you can mix things up with unique options like chipotle, paprika, or even wasabi. The key is to use just enough spice to add some excitement to your dish without overpowering the other flavors.

- Black pepper – universal spice that may be finely or coarsely ground or cracked.
- Ground chile powder – This is not “chili” powder but is made from dried chiles such as chipotle.
- Cayenne pepper – also called ground red pepper made from a variety of dried chiles.
- White pepper – lighter in color and milder in flavor.
- Chili powder – this is a seasoning mixture of dried chiles, garlic, cumin, coriander, oregano, and gloves.
- Paprika – flavor ranges from mild to pungent and hot. Hungarian has a deeper, heartier flavor and Spanish paprika has a milder flavor.

Salt

Finally, we have salt. Almost all bottled commercial rubs contain salt, and it's pretty much a standard ingredient. Salt is important because it penetrates deep, amplifies flavor, and helps meat retain moisture. But, if you're making your own rub at home, it's best to leave out the salt.

- Salt – fine grained with iodine (regular table salt) and without iodine (canning salt).
- Kosher salt – course grained and very pure.
- Sea salt – from evaporated seawater. May be either fine or coarse grained.
- Seasoned salt (such as Lawry's Seasoned Salt) – regular salt combined with flavoring ingredients such as garlic salt, onion salt, and celery salt.

Standout Ingredient

Just like in music, a standout or signature ingredient is crucial to make the blend truly memorable. It could be a particular type of chili pepper, an exotic spice like saffron or sumac, or even a unique combination of flavors. This special ingredient not only adds a distinct flavor to the blend but also helps it stand out from the crowd. When people taste or smell that ingredient, they will immediately recognize the blend and associate it with that specific flavor. That's the power of a standout ingredient in a spice blend, and why it's essential to consider when creating one.

Why is Salt Important to Creating Perfect BBQ?

Salt is an indispensable ingredient in any BBQ rub, not only because it enhances the flavor of the meat, but also because it helps to retain moisture and improve the texture. In scientific terms, salt helps to break down meat through a process called denaturation, in which salt disrupts and unfolds protein molecules. This creates a more tender structure in the meat, allowing the flavors of the other ingredients in the rub to penetrate more deeply. Salt also draws out moisture from the meat, which is then reabsorbed along with the salt, resulting in a juicier and more flavorful end product. By penetrating the meat, salt helps to amplify the taste of the meat, making it more savory and delicious. In the absence of salt, a BBQ rub may lack complexity of flavor, and the meat may end up dry and tough. Therefore, it's essential to use the right amount of salt in a BBQ rub to achieve the perfect balance of flavor and



moisture.

What is Denaturation?

When salt is applied to meat, it penetrates deep into the muscle fibers, helping to break down proteins and allowing the flavors of the other ingredients in the rub to penetrate more deeply as well.

Additionally, salt helps to amplify the flavor of the meat, making it more savory and delicious. Without salt, a BBQ rub may lack depth and complexity of flavor, and the meat may end up dry and tough. That's why salt is such an important ingredient in any BBQ rub, and why it should be used in the right amount to achieve the perfect balance of flavor and moisture.

Salt helps to break down meat in a process called denaturation. Denaturation is the disruption and unfolding of protein molecules, which occurs when they come into contact with salt. Salt works by creating a high concentration of positively charged ions, which then interact with the negatively charged proteins in the meat. This interaction causes the proteins to unwind and then re-form into a looser, more tender structure. Overall, the addition of salt to a BBQ rub is essential for both the taste and texture of the final product.

The Smoke Ring in Barbecue

By [Derrick Riches](#) - Updated on 12/28/22

What a Smoke Ring Looks Like



A smoke ring is a pink discoloration of meat just under the surface crust (called bark). It can be just a thin line of pink or a rather thick layer. A good smoke ring is around a 1/4 inch in thickness.

What Creates the Smoke Ring

The smoke ring is produced by a chemical reaction between the pigment in the meat and the gases produced from wood or charcoal. When burned, these organic fuels produce nitrogen dioxide gas. This gas infuses into the surface of the meat as it cooks surrounded by the smoke. It reacts with water in the meat and produces nitric oxide.

Myoglobin is the iron-containing purple pigment in meat. When meat is exposed to air, it reacts with oxygen to develop a bright red color that you might think is blood, but isn't. The red or pink color of raw meat is due to this oxygenated myoglobin. When cooked, or exposed to air for a longer duration, it turns brown as the oxygen escapes (basically, the iron in the myoglobin rusts).

But when myoglobin is exposed to nitric oxide, it binds to the myoglobin and blocks oxygen attaching. This retains the pink color even when cooked. The nitric oxide stabilizes the myoglobin and binds tighter than oxygen, preventing the production of the brown metmyoglobin form with cooking.

Getting the Best Smoke Ring

Opinions vary on how to get a good smoke ring. Generally, water-soaked wood produces more nitrogen dioxide in the smoke than dry wood, but only by a small margin. The type of wood also matters in producing more nitric oxide. Charcoal briquets beat lump charcoal. Propane and electric smokers produce far less of the desired gases.

A wet, sticky meat surface will also hold more nitric oxide, so mopping or spraying the meat rather than cooking it dry will enhance the smoke ring. Or, a pan of water in the smoker keeps moisture condensing on the meat. However, you should avoid acidic components like vinegar or lemon juice as that can prevent the smoke ring from developing.

Removing fat from the surface of the meat also exposes the meat to the smoke and will allow more nitric oxide into the meat. Cooking the meat at low and slow temperature will allow the nitric oxide to penetrate more before the meat's temperature is high enough to turn the myoglobin brown.



Maillard Reaction

The **Maillard reaction** ([/maɪˈjɑːr/ my-YAR](#); French: [\[majas\]](#)) is a [chemical reaction](#) between [amino acids](#) and [reducing sugars](#) to create [melanoidins](#), the compounds which give browned food its distinctive flavor. [Seared](#) steaks, fried dumplings, cookies and other kinds of biscuits, breads, toasted marshmallows, falafel and many other foods undergo this reaction. It is named after French chemist [Louis Camille Maillard](#), who first described it in 1912 while attempting to reproduce biological [protein synthesis](#).^{[1][2]} The reaction is a form of [non-enzymatic browning](#) which typically proceeds rapidly from around 140 to 165 °C (280 to 330 °F). Many [recipes](#) call for an oven temperature high enough to ensure that a Maillard reaction occurs.^[3] At higher temperatures, [caramelization](#) (the browning of sugars, a distinct process) and subsequently [pyrolysis](#) (final breakdown leading to burning and the development of acrid flavors) become more pronounced.^[4]

The reactive [carbonyl group](#) of the sugar reacts with the [nucleophilic amino group](#) of the amino acid and forms a complex mixture of poorly characterized molecules responsible for a range of aromas and flavors. This process is accelerated in an alkaline environment (e.g., [lye](#) applied to darken pretzels; see [lye roll](#)), as the amino groups ($\text{RNH}_3^+ \rightarrow \text{RNH}_2$) are [deprotonated](#), and hence have an increased [nucleophilicity](#). This reaction is the basis for many of the [flavoring](#) industry's recipes. At high temperatures, a probable^[5] [carcinogen](#) called [acrylamide](#) can form.^[6] This can be discouraged by heating at a lower temperature, adding [asparaginase](#), or injecting carbon dioxide.^[5]

In the cooking process, Maillard reactions can produce hundreds of different flavor compounds depending on the chemical constituents in the food, the temperature, the cooking time, and the presence of air. These compounds, in turn, often break down to form yet more flavor compounds. [Flavor scientists](#) have used the Maillard reaction over the years to make artificial flavors, the majority of patents being related to the production of meat-like flavors.^[7]



Different Types of Smoking Wood.

Alder – Mild & Sweet

Alder will typically give you the least amount of smoke but adds a nice sweet profile to more delicate types of meat. It is great for and primarily used on fish but can also be used on white meat poultry. **Great For:** Fish, White Meat Poultry

Apple – Mild, Sweet & Fruity

Apple has a mild, sweet & fruity profile. Can be used on virtually anything but it is a more mild smoke flavor so it is better for pork, poultry and fish. **Great For:** Pork, Poultry, Fish

Cherry – Mild, Sweet & Fruity

Cherry is a mild to medium smoke level that is sweet and slightly fruity. It is good on pork, lamb, beef and dark poultry like duck and other gamey meat. **Great For:** Pork, Poultry, Beef, Lamb, Duck

Grape – Medium, Sweet & Fruity

Grape has a medium smoke intensity with a sweet and fruity flavor. Smells great when cooking, great on dark meat poultry, lamb, beef and game, but don't go overboard or else the flavor will be too heavy. **Great For:** Lamb, Dark Meat Poultry, Game, Beef

Hickory – Intense, Smoky & Spicy

Hickory is probably the most popular smoking wood. But it is more intense than the fruit woods so you have to be careful with that you use it on. It has a smoky bacon flavor and is great on beef and pork. **Great For:** Beef, Pork

Maple – Mild & Subtle

Maple wood gives a more subtle, sweet smoky flavor that is perfect for mild, light and sweet smoking. Good for mixing with woods like alder, oak or apple. **Great For:** Poultry, Vegetables, Cheese

Mesquite – Intense, Earthy & Slightly Sweet

Mesquite is the most intense smoke flavor you will find. It should only be used if you really like a bold smokey flavor. Good on large chunks of beef and pork. **Great For:** Beef, Pork

Mulberry – Mild, Sweet & Fruity

Mulberry has a similar taste profile to apple, it has a mild, sweet and fruity flavor. Despite working great for nearly every type of meat, it's great for fish, poultry and pork. **Great For:** Pork, Poultry, Fish



Oak – Medium, Earthy

Oak is another popular smoking wood choice. Oak is less intense than hickory but still gives you a great smoke profile. It is great on virtually anything depending on how much smoke you want. **Great For:** Pork, Beef, Poultry

Peach – Mild, Sweet & Fruity

Peach resembles many other fruit trees in flavor, giving a mild, sweeter flavor with similarities to Hickory, but less intense. Smells great when cooking and works well on poultry and pork. **Great For:** Poultry, Pork








Pecan – Medium, Nutty

Pecan has a rich, sweet, nutty smoke flavor. It is a good all around wood. It works well with pork, beef and poultry. **Great For:** Pork, Beef, Poultry

Sassafras – Medium, Sweet & Fruity

Sassafras has a sweet smell and taste, but you do not need a lot. Can be overpowering if too much is used. Good on Pork and Beef. **Great For:** Pork, Beef

The Ultimate Smoking Wood Flavor Guide:

	SMOKING WOOD FLAVOR GUIDE					
						
ALDER	🔥		🔥		🔥	
APPLE	🔥		🔥	🔥	🔥	
CHERRY	🔥	🔥	🔥	🔥		
GRAPE	🔥	🔥		🔥		
HICKORY	🔥	🔥		🔥		
MAPLE	🔥		🔥	🔥		🔥
MESQUITE		🔥				
MULBERRY	🔥		🔥		🔥	
OAK	🔥	🔥	🔥	🔥	🔥	🔥
PEACH	🔥		🔥	🔥		
PECAN	🔥	🔥	🔥	🔥		
SASSAFRAS	🔥	🔥		🔥		