

Dutch Oven Basics

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Dutch Ovens

A Dutch oven is a black, cast iron pot with a well-fitting lid. There are inside versions (probably used by your grandmother or great grandmother), and a camp style oven, for use with charcoal. A camp style Dutch oven has three stubby legs (to let you put coals under it) and a lip around the edge of the lid (to keep coals on top).

A Dutch oven is a very versatile cooker – it can be used as a regular pot, or as a skillet (either the bottom of the pot or the underside of the lid). And it can also, as the name implies, be used to bake. It bakes because the cast iron spreads the heat from the charcoal all around the inside – just like the oven in your kitchen.

This booklet is intended to provide the beginner with enough information to be successful on their first attempt at cooking outdoors with a camp style Dutch oven.

Choosing an Oven

Dutch ovens can be purchased made from either cast iron or aluminum. Unless you are backpacking, or need to use a Dutch oven where weight is a problem, stick to cast iron ovens where at all possible. They are commonly available in sporting goods stores, and some hardware stores.

Dutch Ovens come in a range of sizes. The basic size oven is 12-inches, and good for meals for 4 to 6 people (sometimes more, depending on what you are cooking). Larger groups will want 14-inch ovens. Smaller 10- and 8-inch pots are also available. They also come in regular and deep sizes – regular will fit most needs, but a deep oven is handy for bigger recipes.

When you purchase a new oven, inspect it closely in the store before you pay for it. Pull the oven and lid out of the box for close inspection. Check for cracks (casting defects are rare, but sometimes happen) and check the fit of the lid. Lid fit is important. The lid must sit flat on the bottom part without any vertical rocking when you push down on different parts of the rim. A flat contact is critical for the Dutch oven to function properly (heat conduction from lid to side wall). In addition, the lid should NOT fit too tightly in the sideways direction. The lid should be able to slide back and forth sideways from 1/16 to 1/8 of an inch. If the fit sideways is too tight, future build-up of seasoning will eventually make it stick closed during a cooking session. If this happens to you, tap upward on the lid with a block of wood to free it.

The best quality cast iron Dutch ovens come from the Lodge Manufacturing Company¹ (they also sell accessories).

Seasoning Your Oven

A Dutch oven will develop a quality non-stick coating after several uses. This coating is essentially cooking oils, which have converted to carbon due to heat. That carbon penetrates all the little pores in the cast iron, making a non-stick surface. The more you cook in the oven, the better that surface becomes.

You can purchase ovens already seasoned, but you will pay for the privilege. If you do purchase a pre-seasoned oven, make sure you follow the washing directions that come with that oven. And even a pre-seasoned oven will benefit from some at-home seasoning before use.

Breaking in, or seasoning, an oven is what you have to do to get the initial coating started. This initial start is important for your oven, so make sure you take the time to do it right.

New unseasoned ovens come with a protective coating of wax or something to keep them from rusting. You have to get this off or your new seasoning won't stick. So the first thing to do with a new oven is wash it. Use hot water and some dish soap. . It won't be obvious that you washed anything off, but you

¹ <http://www.lodgemfg.com/>

did. Thoroughly rinse all the soap out and towel dry. The oven must be seasoned immediately or it will start to rust.

The following procedure is probably best done outside on a gas grill, but it can also be done over charcoal or in your kitchen oven. Be aware that you will probably smell up the kitchen and need to clean the oven if you do it inside. (due to burning oil).

Warm the clean, dry oven and its lid to about 200 degrees. At this temperature, it will be hot but not too hot to touch. It only takes a few minutes on the gas grill.

Thoroughly coat the oven and lid inside and outside (even the bottom and the legs) with Crisco. Let them sit for a while (30 minutes) to allow the oil to be drawn into the pores of the iron.

Put them back on the grill and let them cook at medium-high heat (350 to 400 degrees) for 45 minutes.

Turn off the grill and let them cool back down to touchable temperature (about 30 minutes). Wipe off any excess oil.

Repeat this process (liberal coating of Crisco, sit for a while, and cook for 45 minutes) about 3 times for a new unseasoned oven (or an oven you are re-seasoning). A pre-seasoned oven will only need one cycle.

When you are done, use paper towels to wipe out any excess oil, and coat with a light coating of Crisco or vegetable oil or butter. Do not leave any puddles of oil, but just use enough to give the oven a nice glossy coat. You are now ready to cook.

If you use charcoal, do not let the charcoal touch the metal, or charcoal ash will "cook" into the seasoning finish on the lid. Just set the lid on a lid stand, over 1½ or 2 rings (see temperature control later) of fresh hot charcoal. If you don't have a lid stand, tightly press some heavy-duty aluminum foil over the top of the lid. Sit the lid on the pot and put the charcoal on top. After the oven is well seasoned, the coating will keep the charcoal ash from bonding to the metal.

Dutch Oven Care

Washing

Once the oven has been seasoned, **do not ever** put soap in it again, or you will "un-season" it and have to repeat the process. Your next dish will also possibly taste like soap.

First, scrape out any goopy leftovers or burned stuff with paper towels and/or a plastic spatula or plastic scraper.

Then add some water and set it on the coals for a few minutes to warm up. Now, you can use a natural fiber brush or non-abrasive scrubby to clean it.

Remember, no soap – this means you may want to keep a special scrubby and brush just for Dutch ovens (not used in regular dish washing). Or make sure you thoroughly rinse out your scrubby.

Rinse with clear water and put back on the coals to heat it up to dry completely.

This easy, no-soap cleanup is made possible by the natural non-stick seasoning on the oven.

Utensils

Never use hard metal utensils such as spoons or spatulas inside the pot as they will scratch the seasoning that you are trying to build up inside.

Only use plastic or wooden utensils to stir or serve food, just like you would with a Teflon pan at home.

Storing

To prevent moisture (and rust), I store my ovens with a sheet of loosely waded sheet of newspaper inside to absorb moisture. Fold or roll up a corner of the paper and let it hang out of the lid, to prop it open and allow a bit of airflow. You can also use paper towels instead of newspaper.

Rub the outside of the lid with a waded up sheet of newspaper to clean off excess charcoal ash.

If necessary, lightly coat the oven with oil. This is usually only necessary if you cooked something with a lot of liquid (soup), or something acetic (tomatoes), or had to work especially hard at cleaning up (like after a particularly gooey cobbler). The liquid or acid may have worn away the outer coating of the oven, and a little extra oil will help protect it in storage.

Store the oven away from high heat and humidity.

Always smell the pot (with your nose down inside it) before cooking in it. A sweet pot has no odor at all inside. When a pot is rancid, you will know it, and the food cooked in a rancid pot will taste like the pot smells. If you can smell rancid oil in a pot after storage, you must "sweeten" the pot (see Problems section, below).

Cast Iron Care

Cast iron is brittle. If you drop it on concrete, it will break. If you pour cold water into a hot pot, it can crack the pot. Boiling water, added slowly to a hot pot is OK. Properly cared for, these pots will last several lifetimes.

Cooking in a New Pot

With a new pot, try to avoid cooking things with a lot of water or acids (tomatoes) in the pot at first, as they will tend to get into the unfilled pores and try to rust the pot. Stick with things like meats and biscuits for the first few ties and then you'll be OK.

Also, avoid cooking any kind of dry beans (pinto, navy, baked, etc) in the pot for a while. Cooking beans can damage the seasoning in a pot if the pot is not cleaned right away after cooking. A pot that sits with beans in it all day will have no seasoning left in it.

Problems

Rancid Oil

After a long storage, the oil coating may get rancid, especially if the pot is not stored with the lid propped open. Normal use will gradually build up thickened oil that feels waxy like a candle. This material is part of the seasoning that helps prevent food from sticking, and it is dark brown in color. It is the un-thickened oil that goes rancid.

You can tell a rancid pot by smelling inside it. Rancid pots must be "sweetened" before use.

Sweetening the Pot

To clean out a pot to remove rancid smells, you must carefully, and in a controlled manner, burn it out. Simply put a full spread (see later) of hot charcoal under the pot and a full spread on the lid, with the charcoal laying flat and just touching. After about 5 minutes, lift the lid and quickly wipe out the inside of the pot with a wad of paper towels to remove as much of the liquefied oil as you can (wear gloves). Don't forget to wipe the inside of the lid before you put it back on the pot. Try to do this with the pot very hot. Ten minutes later, dump the coals off the lid and remove the pot from the heat to cool along with the lid (lid off the pot). If it still smells bad after cooling, repeat the procedure.

During this procedure, you are burning off the rancid oil, plus you are converting the waxy oils to carbon at high temperature. This procedure is also what turns the pots black (carbon deposits), which is another part of the desirable protective coating. If you over-do the time on a burn out, you can actually remove the seasoning, and you'll have to re-season the pot. This is why it is best to do burn outs only for 15 minutes at a time. If you don't wipe out the excess oil at first when the pot first gets hot, loose carbon will be formed like scale in the pot, and it must be removed (I use a soft brass brush). The pot is still seasoned after properly burning it out, so just oil it before cooking and you are in business. When oiling the inside of a pot or lid, always lightly oil all the outside surfaces to generate that black pot finish.

Re-Seasoning

Rusty pots or pots with severely damaged seasoning can be completely restored. Use sand, scrape, steel wool, or wire-brush them to remove damaged seasoning or rust. Then treat them as new pots and re-season them, and they will be like new.

Accessories

There are a lot of accessories out there, and you can spend a lot of money on stuff. But you can get by with just a few things to start with. I have listed these in basically the order you might want to acquire them (the first ones are necessary, the last ones are luxuries).

Chimney

You will need a charcoal starter. Chimney starters are the best way to light charcoal. They are available at sporting goods stores, or you can make one from a large coffee can with both ends cut out and some holes punched in the sides.

Gloves

You need gloves to protect your hands. I recommend welding gloves, because with a good pair of these you can handle the hot pot and keep your knuckles safe. But a basic leather or gardening or barbeque glove will help.

Tongs

You will need some way to move the charcoal around. An old set of barbeque or fireplace tongs will be fine. Longer is better, but if you have a good set of gloves, you can get by with shorter tongs.

Lid Lifter

Lid lifters come in all types. The basic idea is to get a hot lid off the pot without dumping ashes into your dinner. A pair of pliers (to balance the edge of the lid) and a coat-hanger hook might be all you need.

Several companies make lid lifters that look like a hook with a bar across it. The hook grabs the lid handle, and the bar rests on the lid to steady it. The Lodge lifter is the best one of this style. If you get a different one, try it out in the store and make sure you can lift the lid and keep it level and secure (to keep the coals out of the food). If the lid is swinging from a hook, you will end up dumping ashes in your meal.

A pair of pliers on the edge of the lip can help stabilize the lid, especially when you have a cheap lifter or need to dump coals.

You can also get a lid lifter that is more like a clamp. These give you great control over the lid, but are probably really not necessary initially.

Small Shovel

A small shovel – like a fireplace shovel – can help move charcoal around, and clean up ashes afterwards. It is also a good safety tool when fire is involved.

Lid Stand

You will need something to put the hot lid on while you are stirring, serving, etc. You can buy lid stands just about wherever Dutch ovens are sold.

Or you can use three clean rocks, or a piece of wood. Or spread a sheet of aluminum foil on the ground. I have even used the top of my (empty!) charcoal chimney.

The one nice thing about a purchased lid lifter is they can also double as a trivet to hold a round cake pan off the bottom of your oven (like, for baking biscuits or a cake).

Charcoal Table

You need someplace to spread the charcoal and set your oven on it, without burning the ground.

This can be as basic as a sheet of aluminum foil on dirt. Or you might find a few firebricks or concrete blocks to get yourself off the ground. Or a sheet of metal with rocks or bricks for legs can also work.

You can also purchase a charcoal table – a metal table that you can burn charcoal on. Camp Chef² makes a nice one that is the height of a regular table, and has room for two ovens. This gives you a nice, sturdy work surface, gets the oven off the ground, and keeps you from bending over to work. It can also be used as a cook table when you're not charcoaling.

Stove Bag

I have the Camp Chef table, and have found that the Cary Bag for their double-burner stove fits this table ideally. It gives me a way to store and carry the table, plus room for my chimney, shovel, lid lifters, etc.

Starting the Charcoal

Use a charcoal chimney. Put a bunch of charcoal in the top section and use fire starter blocks or newspaper below. A couple of fire starter blocks work nicely. If you use newspaper, you should tear the sheets in half and wad them up loosely. Three half-sheet wads seem to be ideal – too little and you don't have enough fuel, too much packed under there and it is starved for air.

It will take about 20 or 30 minutes to start charcoal in a chimney starter. Make sure you include this time in your meal planning. It may not look lit in the starter, but if it has flames coming out the top and no smoke, it is ready. Hot coals will be just covered with white ash (but still their original size).

When ready, dump out the coals and use the fully lit ones first. Put the rest back in the chimney; they are safer there, and can be used to light more charcoal if needed.

Always start a bit more charcoal than you need, so you can add the extra later to maintain heat if necessary, especially if it is cold, windy or you are cooking something that takes more than about an hour.

Freshly lit charcoal will burn for about an hour when placed on/under a pot, unless it is cold or windy (when it will burn faster). If your recipe takes more than about an hour, start another batch of charcoal after about 30 minutes. Save a few hot coals in the chimney and you won't need more newspaper or starter bricks, just add fresh charcoal and it will start. For long cooking recipes, you will need to watch your charcoal and plan ahead to have a supply of fresh coals ready as they are needed.

² <http://www.campchef.com/>

Temperature

Most recipes bake at around 350°. This is the most common baking temperature. If your recipe doesn't say what temperature, you can assume this.

Fresh, hot coals are barely covered with white ash, and you can only hold your hand near them for 2 or 3 seconds. Low coals are covered with ash and you can hold your hand near for about 7 seconds.

Temperature methods assume you have hot coals. As your coals die down, you will need to add more hot coals to keep the pot at the desired temperature.

The cast iron will “soak up” the heat from the coals, and spread it out to the entire oven. So you put some of the coals around the edge of the lid., to heat both the top and sides of the oven. Other coals go on the bottom, around the edge, to heat the bottom and the lower side. This will give you an even temperature inside the oven for baking. Since the food is sitting right on the bottom of the oven, you need fewer coals on bottom than you do on top. Remember, you are usually trying to bake – which means heat from all around (that's why they call it an “oven”).

I have found that keeping the coals around the edge of the bottom (none in the middle) works well, because it reduces extra heat buildup on the bottom, and I have not had burned food since I started doing it this way.

I prefer good quality charcoal briquettes for Dutch oven cooking, because they are more predictable than wood coals, but you can also use coals from your campfire to cook with. I suggest you practice with charcoal first, until you get to know how a Dutch oven “feels” when it is cooking at the right temperature. Note that the temperature of campfire coals varies greatly depending on the type of wood being burned. Soft woods (Pine) burn much cooler than hard woods (Oak), which will heat more like charcoal.

Lower quality charcoal is also less predictable. I stick to Kingsford brand.

Pre-Heating

Always preheat your Dutch oven, unless the recipe says otherwise. Be patient! It takes about 10 to 15 minutes to preheat an oven. Do not rush this process – a Dutch oven will hold its temperature for a long time, so if you try to rush the preheating (using too many coals), you will over-shoot your desired temperature and end up cooking too hot (even if you remove coals after the oven is heated, it takes a long time to get back down where you wanted it). This is a common cause of burned food.

Preheating will also serve to sterilize your oven.

Temperature – Counting Coals

To heat oven to a 300° to 350° range, use twice the number of charcoals as the number that's stamped on the lid (that is, 24 coals for a 12” oven). Divide these coals into two equal piles, and then move 3 from one pile into another, so you have piles of 9 and 15. Put the smaller pile under the oven (around the outer edge) and the other pile around the lip of the lid.

To adjust the temperature, add 2 coals for every 20° extra heat you want.

Temperature – The Ring Method³

I find counting coals too complicated, and it also requires you to guess at how many half-burnt coals count for whatever temperature. So I have started using a Ring Method.

³ The Ring Method, as well as a lot of other information in this guide, is from *Outdoor Cooking with Dutch Ovens*, by Sandy & Duane Dinwiddie: <http://www.lsdos.com/outdoor.html>

If you make a circle of hot charcoal around the outside edge of the pot, with all of the briquettes lying flat and touching each other (except for spaces for the legs on the bottom rings), that is "one ring". A "half ring" is the same size circle, but with every other briquette missing. Two rings is simply a second ring just inside the first, with the rings touching.

This ring technique is kind of self-correcting for the size of the briquettes used. If your charcoal has been burning for a while, the pieces will be smaller and will put out less heat. But, it will take more of them to make a ring, so you still get about the same temperature in the end.

Setting	Approximate Temperature	Bottom Rings	Top Rings
Low	300°	1	1
Medium	350°	1	1 1/2
Hot	400°	1	2
Very Hot	450° to 500°	1	2 1/2

Notice with this method that you never change the number of rings under the pot. It is always one ring, around where the legs of the pot are. Hint: 1 ring under a 12-inch pot will have four pieces of freshly lit charcoal between each leg; a 14-inch pot will have five.

Pot Size Adjustments

The above settings are given for a 12-inch pot. For larger pots, you will need more charcoal on top to maintain the indicated temperatures, and less charcoal on smaller pots. Temperature is controlled partly by how much (percentage) of the lid is covered with charcoal. A 12-inch pot with 2 rings on top will be hotter than a 14-inch pot with 2 rings on top. This is because two rings on top of a 12-inch oven will cover less of the lid (percentage wise) than two rings on a 14-inch pot. You will quickly learn to adjust the absolute amount of charcoal for different size pots.

Frying and Boiling

The exception is for frying or boiling, where I start with a full spread under the pot, and a few coals on top just to keep the heat in. And a full spread means to put all the briquettes you can, one layer deep, lying flat, under the pot. Once it is frying or boiling briskly, take a few coals out from under the pot until it is cooking properly. Add some back if it slows down too much.

Adjust for Weather

It's going to take more coals to get the same heat in the winter than it will take in the summer. Sun vs. shade will also make a difference of around 25° on a black pot.

When windy, charcoal will burn faster, and the wind blows the heat down-wind. When windy, turn the pot half-a-turn, 2 or 3 times while cooking to even out this effect.

Cooking by Feel

If you absolutely must know what temperature is in the oven with a certain amount of charcoal, then get an oven thermometer and find out, but that takes all the fun out of it. Learn to "feel" how much charcoal is right for a particular dish. I don't mean feel with your hands, but feel with your eyes. Look inside the

pot to see if your food is simmering or baking properly or browning properly, etc, and add or take away charcoal as needed.

No Checkerboards

If you are unsure, err on the hot side. It is really hard to burn something in a Dutch oven, except as follows. Most Dutch oven cookbooks tell you to arrange the charcoal in a checkerboard pattern both on the lid and under the oven. You will burn things with a checkerboard under the pot!

Charcoal radiates heat in all directions. Those that are under the outside edge of the pot will radiate heat not only up towards the pot, but in towards the center under the pot. All of the coals around the edge will add to the temperature under the center of the pot. If you also have charcoal under the center of the pot, as in a checkerboard pattern, the center will be much hotter than the outside edge, and the center of baked foods will frequently burn. Many experienced Dutch oven cooks still swear by the "tried and true" method of checkerboard patterns, and they cook successfully. I have found that the ring method is more forgiving for beginners.

General Cooking Tips

Take Notes

Start a personal cookbook, and keep track of recipes, including how much charcoal you used, how long you cooked it, and whether it was done correctly. The final answer is to practice, and keep records. You will rapidly learn how much charcoal, time, etc. it takes to make your pot do what you want it to.

Use Regular Recipes

Don't be afraid to use recipes directly out of regular cookbooks. Just remember that Dutch ovens don't let much water evaporate during cooking. You will learn how to adjust the liquid content (water, milk, eggs, etc) in recipes to allow for this. If it is too wet when it is done, note this in your recipe book and adjust for it the next time.

Oven sizes

Lodge manufactures ovens in the following sizes, where the numbers indicate the diameter of the pot in inches: 5, 8, 10, 12, 12 deep, 14, 14 deep, and 16. The deep ovens are about 2 inches deeper than the regular ones.

The two most common sizes used are the 12 and 14. You periodically may need to convert a recipe from say a 12-inch oven to a 14, or visa-versa. The nominal capacities of these three ovens are 6, and 8 quarts respectively.

To convert a recipe from a 12 to a 14, multiply ingredients by $1\frac{1}{2}$ (1.5), or by $\frac{2}{3}$ (.67) to go from 14 to 12. Don't change cooking times.

A recipe that calls for a 9x13 casserole dish will fit nicely in a 12-inch oven.

Cakes, Bread, Biscuits, etc

For biscuits, cakes, etc, you can set a round cake pan in your oven. Raise it off the bottom of the pot using balls of foil or small rocks or a rack or trivet. Use the temperature chart and cook per the recipe.

Or just do the recipe with the dough directly in the bottom of the Dutch oven. Any recipe that calls for cooking in a 9x13 cake pan will fit fine into a 12-inch oven.

If I'm worried about the bottom of my cake burning, I will reduce the heat from the bottom of the oven after it's heated up (about 15 minutes into cooking, or so). Sometimes I reduce the number of charcoal

briquettes underneath. Sometimes I just make the bottom ring bigger (same number of coals, but out nearer the corner of the oven rather than around the legs). And sometimes I remove the bottom coals altogether. It just depends on how I feel (see “Cooking by Feel,” above).

Foil Liners

Sometimes, you will see recommendations to line your oven with foil before cooking. Usually these are aimed at avoiding cleanup. But since a properly seasoned oven is so easy to clean, this isn't much worth doing except for maybe some of the stickiest deserts. Also remember that cooking in your oven actually builds the non-stick seasoning.

The one good use for foil I have found is cakes and cobblers, but not because of cleanup. Lining the oven with foil will make for easy serving – just lift the foil out of the pot and put it on the picnic table. Being able to lift the whole cake out in one piece is really nice.