



PrimitiveFire.com Bowdrill Fire Manual

This manual contains in-depth instructions for making bowdrill fires quickly and efficiently. Please note that 95% of the effort that goes into making a bowdrill fire has nothing to do with physical strength, but it has to do with the equipment that you are using, technique, and preparation. This manual covers the proper technique for making bowdrill fires quickly, efficiently, and reliably.

Step 1: Making a Nest

- Before you ever begin to bowdrill you need to make a nest. To make a proper nest that you will place the coal produced by your bowdrill equipment into – take the end of a long strand of juniper, cottonwood or similar flexible bark material into one hand. Wrap the tinder (bark) around that hand, or 3-4 fingers if you want to conserve your nesting, until there is approximately 6-8 inches of the strand left hanging. Tuck the remaining 6-8 inches of the strand into your nest and fashion it so that it looks and feels like a real bird's nest. The nest should be tight and not easily taken apart once you are done with the wrapping stage. There should not be large holes anywhere in the nest for the coal to fall through. The last step of making the nest is to put in "fines". This is super important and cannot be overlooked. Take a couple of inches of tinder (bark) and start rolling it, shredding it, and breaking it into fine pieces. You don't want the fines to be powder, but it should be reduced to just fibers. Produce enough fines to completely fill your nest and then press with your index finger into the middle the nest a depression about ¼" to place your coal. Now set the nest nearby so that you have easy access to it, but not too close so that you accidentally hit it while you are bowdrilling. Last but not least take time to make a proper nest. After the effort you put into making coal the last thing you want is to have a nest that kills your coal.

Step 2: Prepare Bowdrill Equipment

- If you don't prepare then prepare to swear. If you properly prepare your equipment you will have much better results than just trying to bow out a coal on a whim. The components needed to bowdrill are a spindle, fireboard, palm rock, bow, 3mm cord, shoelace, or durable cord, and a leaf or leather coal catch to catch the coal that will come out of your fireboard.
 - **Each of the components needs to be properly prepared in order to reliably and quickly make coals.**
 - The spindle should be 6-8 inches long preferably. You can use a shorter or longer spindle if you had to, but this is the ideal length. The spindle should be straight and ½" to 1" in diameter. The diameter of the spindle should be at least ½" less than the width of the fireboard you will be drilling into. If you use a spindle that is too large for the fireboard you will crack the fireboard when you start drilling. As with the fireboard you can use all sorts of materials to perform a bowdrill fire and some are more reliable under extreme weather

conditions than others. The materials used on Primitive Fire.com are especially good for making very fast fires.

- The fireboard should be 8-12 inches long and flat on top and bottom and on at least one side. It should be approximately 2-3 inches in height. You could of course use a round piece of wood if you had to, but it will not be as stable or reliable as a properly prepared fireboard. The fireboard should be mostly solid throughout with few or very small cracks if any. Fireboards with cracks risk the potential of obviously cracking under pressure.
- The palm rock should comfortably fit in your palm. You should be able to grip the palm rock and see that your fingers will not be close to the pre-drilled hole in your palm rock. If your fingers are too close you may get some bloody fingers in the event that the spindle comes flying out of the hole in the palm rock. The weight of the palm rock does not have any bearing on producing a coal, but a palm rock should be solid and durable. Do not use a soft rock for a palm rock. Soft rock may break under pressure and heat. Primitive Fire.com uses riverbed rock that will last for years and is perfectly molded by the elements to fit comfortably in the palm.
- The bow should be of the proper length, strength, and curvature. The ideal length for a bow is determined by placing one end of the bow in the middle of your chest and then stretching out both arms to the other end of the bow. Your fingers should come right to the end of the bow. If the bow is a little longer or shorter that is okay, but if it is over 4" in either direction then the bow will not be adequate for your arm length. A bowdrill bow should not be equated to a bow and arrow bow. While there is some aesthetic resemblance the bowdrill bow is much more rigid. Meaning that it should not have much flexibility if any. Typically Juniper is a good wood to use for a bowdrill bow. Juniper grows in a way that its branches have natural arches to give the bow some curvature, but the bow is rigid and does not bend much when you start to bow with it. If a bow is too flexible the cord tied to the bow will loosen while bowdrilling and lose its grip on the spindle, which means it will slip on the spindle and you will not get a coal very easily. The main reason for a rigid bow is that it will keep the tension of your cord pretty consistent.
- There are several types of cord you can use to tie from one end of the bow to the other, but keep in mind that this cord will experience heat and friction. If it is not durable it will soon break. A good quality 3mm parachute cord is advisable. Of course in a survival situation you would craft a cord out of whatever you had available. The cord should have an extra foot to foot and a half in addition to the length of the bow. The excess will be used to tie off one of the ends of the bow so that the cord will not slip. Once you have your cord tie a slipknot on one end. If the top of your bow does not have a V then you can cut a notch deep enough to hold your cord and not slip. Lasso the slipknot either into the V or the notch you have cut and pull it tight. Then pull the rest of the cord to the other end

of the bow tightly with just a touch of slack to allow grab on a spindle. You can tie off this end of the cord a few inches from the end of the bow into another notch deep enough to steadily hold the cord. A tight half hitch over and over with excess cordage should keep the cord taught on your bow. Make sure to tie off the excess so that it does not hang off the bow and get in your way.

Step 3: Find a good spot and get positioned

- Location, location, location. Find a place out of the wind and rain if possible. If it is too windy you risk having the wind blow your coal away. You also want to find a spot that is hard and flat with plenty of room for you to get down on one knee and for you to move a bow back and forth.
- Place the fireboard onto a thick leaf or leather catch to catch the coal that will come out of your fireboard.
- Get down on one knee and place your left foot if you are right handed onto the fireboard. The forward arch of your foot should be as close to where you will be drilling without coming in contact with the spindle. Using a knife make sharp both ends of your spindle like a pencil tip. Then using the end of a knife or piece of flint make a hole about half the diameter of your spindle and 1/8" deep and rounded in the middle into the center (center of the width) of the fireboard on the right side of the fireboard leaving space between what will eventually be the side of the hole you will burn and the edge of the fireboard. Remember if you are too close to any edge things will go wrong. Keep in mind that the hole you drill will eventually be the diameter of the spindle you are using. Positioning of the hole is crucial. Just remember that the diameter of the hole, which will be the diameter of the spindle needs to be 1/4" from any side. That being said the diameter of the hole on one of the long sides of the fireboard (the side you flattened in the steps before) should only be at most 1/4" from the flattened long side.
- Now using your left leg (again if you are right handed) to help hold the bow steady and place your spindle across the cord in both the center of the bow and the center of the spindle and wrap the cord around the spindle. The spindle should be on the outside of the cord away from the bow. Hold the spindle and cord tightly so that the spindle does not come loose and place the spindle into the hole you drilled in the fireboard.
- Grab your palm rock and place it palm rock hole down onto the top of the spindle in the fireboard. Wrap your left arm (if you are right handed) around your left leg so that the crook of your wrist is pulled tightly against your left shin. You will use your left leg to keep the spindle straight up and down and stable. Note: It is NOT the strength of your arm that holds the spindle steady and straight up and down while you are bowing. The only things you are doing with your arm while you bow is holding the palm rock flat on top of the spindle and pulling your left arm against your leg to make your leg and arm become one. This is a major key in making very fast and reliable bowdrill fires. If you try to use the strength of your arm alone to keep the spindle from wobbling or getting crooked you will have a very difficult time at it.
- Now grab the very end of your bow and hold the bow level to the ground. The bow must be kept level to the ground at all times. If you do not bow level to the ground the cord will run up or down on the spindle and eventually send the spindle flying and usually at your hand. If you keep the bow level to

the ground and focus on keeping the cord in the middle of the spindle you will be well on your way to mastering this skill.

- Now you are ready to burn a hole into your fireboard in preparation to making a notch into your burnt hole to let the punk (black stuff) out of the hole and form into a coal.

Step 4: Burning the hole

- You are not trying to make a coal at this stage. You are simply burning a hole into your fireboard so that you can make a proper notch based on the diameter of the burnt hole.
- At this point you should have everything in place and you are ready to drill a hole. Note: you will be drilling down until the diameter of the spindle is burnt into the fireboard and no more. You don't want to burn out your hole, but at the same time you don't want the burnt hole to be too shallow because there will be a chance that your spindle may want to slip out of the burnt hole once you have cut the notch into the fireboard.
- With enough pressure to keep the spindle in the fireboard start pushing and pulling the bow back and forth making sure to use the full length of your bow. Start slow and focus on keeping your spindle straight up and down and stable. Your spindle should never get wobbly. If it does or you do not hold it straight up and down in the fireboard you will generally burn right out the side of the fireboard and ruin the hole you are drilling. Keeping the spindle straight up and down and stable is key to getting it right.
- Gradually increase both pressure on the palm rock and speed on the bow. Again, make sure to use the entire length of the bow when you are going back and forth. This will take a lot of strain off the arm that is bowing. Once you see smoke, which if you are doing it correctly should only take a few seconds, then increase your pressure on the palm rock and speed once again and burn until you can see the diameter of your spindle burnt into the fireboard.
- If you have never done this before this may be pretty exciting, but very rarely unless you are using certain types of materials will you get what is called a rim coal that forms on the top of your fireboard without a notch. So now let's cut the notch so that you can get that coal.
- Using a knife cutting a pac-man or V into the flat side of the fireboard all the way into the center of the burnt hole. Take care not to go further than the center and not to make the notch too wide. The pac-man or V should be about 1/8 of the circumference of the burnt hole. Now that you have a notch – when you bow again the punk (black stuff) created by the friction between the spindle and fireboard will form in the notch and get very hot and turn into a coal.

Step 5: A little more prep and time to make a fire

- Now that you have used your spindle you will notice that the end that was in the palm rock has lost its sharpness and the end in the fireboard may have gone flat. You will always want to sharpen the end that goes into the palm rock. Between the palm rock and spindle you want as little friction as possible. The friction you do want is between the end of the spindle that is placed in the fireboard and the fireboard. However, you always want to conserve your fireboard. You should be able to get at least 4 to 5 fires from

- one hole in a fireboard. In order to conserve your fireboard keep the end of your spindle flat and slightly rounded on the outside. This will also create maximum friction and a very fast coal.
- Now get positioned. Follow the exact same steps as in number 3. This time make sure your nest is close by so that you can place the coal into it. Remember it is 95% equipment, technique, and preparation.
 - If you are a beginner, once you see smoke count to 20 or 30 before you stop bowing. Smoke should be present during the entire 20 to 30 seconds. Advanced bowdrillers can produce a couple in 2-3 seconds using these same techniques and so will you if you follow this manual exactly. Note: the length of time to produce a coal is dependent on the materials you are using. Primitive Fire.com uses materials that are the very easiest to make a coal with. There are other species that take longer to make a coal.
 - Now that you are done bowing calm down. Carefully take the spindle out of the fireboard taking care not to knock the fireboard around. Keep your foot on the fireboard. At this point if you have produced a coal you may see red embers. Take your spindle and gently tap on top of your fireboard to dislodge the coal from the notch. Notice the word gently. At this point you may be pretty pumped and excited so you need to relax and take caution to not break the coal apart.
 - Now move the fireboard away from the hole and very carefully lift up your leaf or leather catch and dump the coal into the depressed hole in your nest. Do not grab the coal with your fingers.
 - Once the coal is safely in the nest squeeze the nest around the coal. Don't pinch the coal, but for the most part enclose it so that when you start blowing on it, it won't jump out at you or fly out of the nest.
 - Get the wind if there is any to your back. This will help breath the coal into flames. Blow long, slow, gentle breaths. If the coal is sparking wildly you either do not have enclosed enough or you are blowing to hard. Keep blowing until you see flame. Once you see flame place the nest into your fire pit and start placing small kindling on top of it. Blow on the nest from time to time to keep the flame alive.

You've done it. You have now made a coal hopefully. If not, don't lose heart. Generally it takes people two to three days of consistent practice before they get their first fire. Some people have beginners luck, but they are few and far between. Remember – remember that it is 95% equipment, technique, and preparation that make this a reliable method for making a fire and not strength alone. Once you have mastered this skill please send us your fastest time in making a coal and fire and we will post it on PrimitiveFire.com.

Best of Luck,

Nathan Zabaldo
President
Primitive Fire