

## Making Fire With Flint & Steel

For long term wilderness experiences, my personal fire-starting ‘method of choice’ would have to be flint & steel. Flint & steel is a tried and true historic fire-starting method that goes back at least to Roman times —probably even earlier. Although it is possible to make fire indefinitely in the wilderness with just the ‘striker’ from a flint & steel set, the usual flint and steel set consists of:

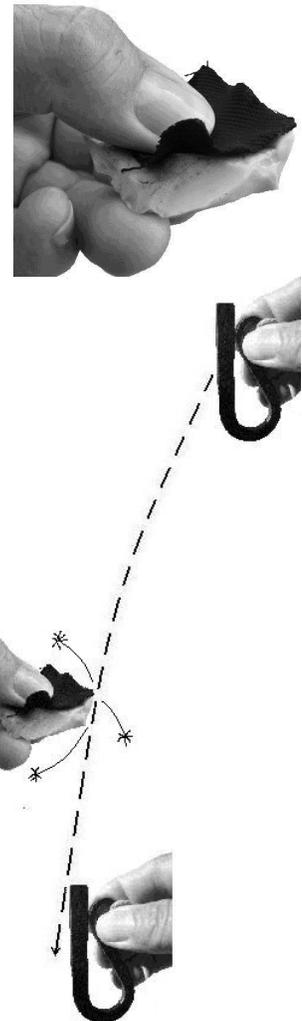
- a fire-hardened carbon-steel ‘striker’
- a piece of flint or some other hard glassy rock with a sharp edge
- some charred: 100% cotton or linen cloth, rotten wood, or tinder fungus
- a tin for making charred material
- and, it is a good idea to include enough dry tinder to make a tinder bundle —for those times when it is not possible to gather dry tinder ‘on the spot.’

Before you strike a spark, prepare a safe area for the fire, make a tinder bundle, get together some kindling, and have at least some fuel wood ready.

Because this method has been around for centuries, there are many different ways of striking, and catching the spark. We have found the method described here to be effective, as well as easy to learn. Start by finding a good sharp edge on the ‘flint.’ If possible choose a thicker edge over a thinner one simply because the thicker edge will be stronger. Ideally the edge should be about 75 to 80 degrees. This striking edge needs to be *sharp*, not rounded. When you run your finger or thumb print across the edge you should feel it ‘catch’ in the ridges of your print. Place a piece of charred cloth on top of the flint, with the ‘fuzziest’ edge of the cloth near the striking edge. Hold it in place with your thumb, and securely support the underside of the rock with your fingers.

Grasp the striker securely with the other hand in such a way that the striking edge is facing away from your hand, and your knuckles are as far out of the way as possible —so they won’t get scraped while striking.

With a sharp, downward, scraping blow, strike the edge of the rock with the steel striker. The goal is to scrape off tiny bits of metal from the steel with the flint. Sparks are caused by the energy from the strike going into these tiny bits of metal causing them to glow. If the edge of the rock being struck isn’t sharp, it won’t scrape off these tiny bits of metal. If the rock is not struck hard enough, there won’t be enough energy to make sparks. So remember: Power In = Power Out. You may want to practice making sparks without the charred cloth in position, as charred cloth is quite fragile and could easily get shredded by the time you learn to make good sparks.



If the edge becomes dull and rounded from repeated use, it will not make sparks. Find another sharp edge on the rock. If necessary you can chip away a new edge with a small hammer, another rock, or something similar. Or, find another rock. Don't waste your time or energy trying to make sparks with a dull edge.

Once you have learned to consistently make good, hot sparks, try catching a spark with a piece of charred cloth. Because the sparks tend to fly in every direction, they may or may not hit the cloth even though you are making good sparks, so keep at it. Sooner or later a spark will catch in the charred fibers of the cloth and begin a tiny glowing ember.

Place the burning charred cloth in the center of the tinder bundle and carefully fold the bundle together around the glowing charred cloth, (somewhat like a 'taco'). Keep the open side toward you, and gently blow it to flame. (See the fire-drill section for more on blowing a tinder bundle to flame.) Once you have flame, carefully place the burning tinder in the fire pit, and quickly add the smaller kindling to the top of the flaming bundle. As this smaller kindling catches fire, add larger and larger kindling to build up the fire.

### How to Make Charred Cloth

Charred cloth is easily made in a small steel 'tin' that can be placed in a fire. This tin needs to have a small hole for the smoke that is generated in the charring process to escape. The lid could be placed on the tin in such a way that it is slightly 'cracked' open. However if the lid were to come during the process, it could ruin the charring cloth. Some tins have a hinged lid, and there are probably already holes at the hinge. Otherwise, a small hole can be punched or drilled in the lid. A preferred method is to drill an 1/8 in / 2 or 3 mm hole through both the edge of the lid and the tin at the same place. When charring cloth, the holes can be lined up to provide an escape for the smoke. Otherwise the lid can be turned so the holes do not line up, to seal off and protect the charred cloth inside the tin.



Loosely fill the tin with 1½ to 2 in / 3 to 4 cm squares of 100% cotton or linen cloth. Heavy cloth works best, such as denim from an old pair of jeans. Put the lid on the tin, then place the tin in a fire. As the cloth inside the tin heats up, smoke and/or flame will begin shooting out of the hole. (Remember, flame is just burning smoke.) Keep the fire built up around the tin to keep it hot —the metal of the tin may even become 'red hot.' When the smoke and/or flame stops coming out of the hole, leave the tin in the fire for another minute or so to be sure the cloth is done. Then carefully take the tin out of the fire, being sure the lid stays closed. Let the tin cool to touch before you open it. If the hot charred cloth is exposed to oxygen it will immediately start glowing, and all your work will literally get burnt up. (If the lid *does* come off, replace it as quickly as possible.) Once the tin is cool to the touch, open it and check the cloth to see that the cloth has been thoroughly charred. (It can be placed back in the fire again if necessary.) It is also a good idea to try catching a spark to check how well this new

batch works. The tiny ember can be quickly pinched out to save the piece of charred cloth to use later.

Incidentally, this charring method is the same as the process for making medicinal charcoal. The only difference is that medicinal charcoal is usually made from sticks of wood, which would be ground to powder after charring, and you would also want to use a larger tin make a larger batch.

#### If You Run out of Cloth to Char

If you run out of cloth to char, some rotten woods can be charred the same way. Look for the 'white,' spongy, well rotted wood from deciduous, or broad leaf trees. This rotten wood is also sometimes called 'punk wood.' The cubical 'brown rot' from the evergreens, or needle leaf trees, doesn't seem to want to catch sparks. But, this brown rot makes great coal extender, even without being charred. Experiment with what you have in your area before you actually need to use it.

Pieces of charred rotten wood are quite fragile, and therefore they are difficult to hold on a rock the same way as a piece of charred cloth. So, leave them in the opened tin, or spread them out on a flat surface, and strike sparks directly over them instead. Strike horizontally, rather than using the vertical strikes described earlier. This will help to keep everything from being struck and scattered. Some charred rotten wood catches sparks even more easily than charred cloth, so a burning coal can quickly spread to the other pieces. If this happens, quickly put one piece in the tinder bundle, and then smother the others in the closed tin to save them for future use.

If good hot sparks are falling on the charred rotten wood and it is not catching, it might be helpful to crush the charred rotten wood to powder. Experiment, and test each new batch of charred rotten wood, as there are many degrees of rottenness, and each chunk of wood seems to work just a little different.

#### If You Don't Have a Tin for Charring

Cloth or rotten wood it can be charred by burying it just below the surface of the ground, and then building a fire over the top of it. The key is to heat the material to be charred in the absence of oxygen. First it must be heated enough to drive off all the smoke gasses, then cooled it below its combustion temperature before exposing it to air.

#### Finding More 'Flint'

Eventually the edges on the 'flint' you are using will wear out —probably sooner than you would like. Chipping the rock down to make new edges may or may not work. Even if it does, eventually the rock will get too small to be used effectively. So you will need to find new 'flints' somewhat regularly. In your wanderings, keep an eye out for rocks that are hard and finely grained, even "glassy." (Obsidian is glassy, but it is too soft to throw sparks well.) Rocks such as flint and chert work well. Jasper and agate are even harder and therefore work better yet! If necessary, break the rocks you find to expose a fresh sharp edge, and test them with your striker. When you find a good rock hang onto it as it is always a good idea to carry an extra 'flint' in your fire-kit.

### Tips:

- If the rock is being struck repeatedly, and no sparks are being made, make sure you are striking a good sharp edge, and that you are striking hard enough with a good 'follow-through.' It takes a sharp edge and strong strikes to make good hot sparks. Remember, Power In = Power Out.
- All things considered, (assuming your technique is good), the most important factor in getting good hot sparks is the hardness of the rock and the 'sharpness' of the edge being struck. Learn to feel a good edge by the way it grabs the ridges of your thumb-print as you drag your thumb across the edge. If the edges of your rock have become rounded or 'chewed up,' either chip off a fresh edge, or get a new rock.
- Once a spark has caught, occasionally, the coolness of the rock will cause a glowing ember to go out. So it is usually a good idea to remove the cloth from the flint as soon as you have caught a spark, and place it directly into the tinder bundle.
- It may be fascinating to hold a piece of charred cloth that has just caught a spark in the air and watch the ember grow —especially if you gently blow on it. However, this will burn up a portion of the charred cloth, and it is ultimately a loss of heat that could be helping to bring the tinder bundle to flame.
- If for some reason the tinder bundle is not catching fire, and the charred cloth is starting to burn out, rather than letting it go out and starting all over again, quickly place another piece of charred cloth in the tinder bundle. Be sure it touches a spot that is still glowing. It should catch the ember, and you can try to blow the tinder bundle to flame again.
- Some people add a second piece of charred cloth to the piece that was used to catch the spark, placing both pieces into the tinder bundle. This will give a larger coal, and help insure success in blowing the tinder to flame. However, there may be times when you want, or *need* to conserve your charred cloth, rather than using an extra piece. Essentially the same thing can accomplish by adding some 'coal extender' such as: powdered rotten wood; dry 'pith' from the center of many plant stalks; or dry, very fine, almost powdered, tinder material. It is worth practicing with various coal extenders, as someday you may even need to tear your pieces of charred cloth in half instead of using an extra piece.
- Making and using tinder bundles is a skill in itself! Practice, practice, practice. Don't wait until you really *need* a fire to learn how to make a good tinder bundle and blow it to flame.
- Steel strikers blend well with the forest floor, and many have been lost in the excitement of catching a spark and blowing the tinder bundle to flame. So be careful where you place the flint and striker after you have caught the spark! You may want to attach a short length of light colored string to the striker to make it easier to find.
- If your striker gets rusty, clean it with a pot scrubber or wire brush, and give it a light coat of oil.