

Flint and Steel

By Steven Dykeman

Be safe
Have fun
Better yourself



Flint and steel is another fire starting technique that is highly desirable to learn since it does not rely on modern infrastructure to be operational. You can easily find a piece of steel and a sharp hard rock to create fire. It can be highly rewarding to develop this skill. It is more difficult than using the ferro-rod



because it is much harder to generate a spark, and not as many sparks are produced with a single strike. An example of a flint rock and steel striker is shown to the left. The convenient “C” shaped steel striker is ideal for holding without getting cut by the sharp flint rock.

Clearing up the confusion;

Many people are under the impression that flint makes sparks. Let’s end this thinking right now. The two pictures below show a piece of flint rock against a grinding wheel and a pieces of steel against a grinding wheel. As the grinding

stone scrapes off small fragments of the rock we do not see sparks. The picture on the right, on the other hand, shows many sparks as the grinding stone chips off small particles of steel from a steel bar. The thinking that flint creates sparks comes from the cigarette lighter which used a material similar to the ferrocerium rod to create sparks. Manufacturers called this a flint. It is steel that creates sparks, not flint.



Flint against a grinding stone
No sparks occur



Steel against a grinding stone
Many sparks fly from the steel

Another bit of misinformation is the thought that energy from the impact to the steel is transformed into heat. Although this is true to some extent, this is not what creates the high temperature spark. The sudden exposure of air to the small fragment generates rapid oxidization which is an exothermic reaction. The fragment cannot dissipate heat as fast as it generates it, and therefore becomes glowing hot.

Steel is an alloy of iron with a small percent of carbon to improve its strength and fracture resistance. Various characteristics can be obtained by adding other elements to obtain many steel types such as:

- Carbon steel.
- Manganese steel.
- Nickel steel.
- Nickel-chromium steel.
- Carbon-molybdenum steel.
- Other grades based on the presence or combinations of other elements

In addition to adding elements, working the metal, as well as heating and quenching the metal can have significant effects on the metal's characteristics. Some of metal characteristics for different steel types are:

- Ductility
- Weldability
- strength and hardness
- resistant to deformation
- resistant to contamination

The desired characteristic for the purpose of this paper is to produce sparks. A steel object produces sparks when tiny fragments of iron break off the surface causing the sudden exposure of air. You can forge your own steel fire striker or easily find one on the internet. When purchasing a flint-steel fire starting set, it is important to test it out to see if proper sparks can be produced. I have purchased many kits on the internet and have found a large difference in results from using them. The steel must be hardened but should be softer than the flint. Steel used is often repurposed from old files, leaf and coil springs, and gardening tools.



The steel is shaped into a suitable form such as shown to the left. The striker can be held easily such that your hand is protected from contacting the sharp rock.



To chip off small iron fragments from the steel, a hard sharp rock is used. Besides flint, other hard rocks that can produce a sharp edge can be used, such as quartz, chert, agate, or jasper. You may be able to use another piece of steel such as the back side of your knife. Steel has a hardness of around 6.5 while the flint rock hardness is 7.0. The hardness of glass is typically around 6.0

The number of sparks produced from the steel striker is typically far fewer than what is seen from a ferrocerium rod. Because of this, it is usually necessary to use a very highly combustible material to catch the spark. The most convenient material is char cloth, however other materials such as tree fungus are often used.



How to use the flint and steel to make fire



A good way to catch a spark on charcloth is to create a small fold and pinch the charcloth against the flint rock as shown here.

By creating a little shelf of charcloth near the sharp edge of the flint, it is very possible to catch a spark. Most often you will catch only one spark. I have caught two sparks at once a few times, but one thing for sure is that you are not going to get the huge shower of sparks like produced by a ferro rod. Take a look at the two pictures below. The difference in performance between the plain old steel and a ferrocerium rod is remarkable. It is also important to have quality charcloth.

There are kits out there on the internet that have poor quality steel and poor quality charcloth. There are also kits that are excellent. I have bought a number of kits and found most to be good. It is always necessary to practice and try any product prior to having your life depend on it working.



Charcloth hit with a shower of sparks from a ferrocerium rod.



Charcloth hit with one spark from a steel striker against a flint



By striking the steel against the sharp edge of the flint, a small iron particle can be chipped off and land on the char cloth. When an ember is started on the cloth, blow on it a few times to expand the area of the ember and then place the charcloth in your tinder bundle. Carefully squeeze the burning charcloth in your tinder bundle and blow hard. It is best to blow upward on the tinder bundle to prevent the smoke from getting in your face and causing choking. When the tinder bundle bursts into flame, quickly place it under your kindling.

To get further information on this process and to get other examples with other materials, see the written article or video on "coal to flame".



Making a tinder box

A tinderbox, is a container usually made of metal to contain your flint, steel striker, and tinder (typically charcloth). Often hemp or jute twine is also included to make blowing the char ember into flame more

easy. Before matches (invented in 1826), The tinder box was commonly used as a fire making kit. Shown below is a modern reconstruction using a hinged tin box. An original vintage container was often fancy and often personalized. Today it makes more sense to carry a kit with multiple easier to use items. It is recommended however, to have a flint-steel kit and know how to use it, because there could be a day when this technology is all you have at hand. You can always find something made of steel such as an old rusty file, an old garden rake, a railroad spike, etc. You can buy readymade kits on the internet, or you can build your own.



About the author:

Steve Dykeman is an experienced outdoorsman and survivalist. He has written many articles and produced many videos on subjects relating to outdoors and survival. He has been a course director and instructor to both youth and adults. He has also been a technical consultant to manufacturing companies relating to outdoor gear. He has over 40 years of experience working with space and defense related electronics. He brings his advanced technical abilities to the outdoors, exposing the many myths and fallacies.

In recent days he is educating people to survive into our uncertain future.

