Burning ambitions

Our partner Victorinox explains the science of fire and how to create your own using a bow drill

e all love a campfire but do you understand the science that is happening before your eyes? Fire comes from a chemical reaction between oxygen and a fuel such as wood.

When wood reaches about 300 degrees Fahrenheit (150 degrees Celsius) some of its cellulose material decomposes and releases gas (smoke). Smoke is a compound of hydrogen, carbon and oxygen. The rest of the material forms char, more commonly known as charcoal, which is nearly pure carbon, and ash.

Combustion is an example of an exothermic reaction that releases energy into the surroundings. It is mostly thermal energy, but light and sound energy are also released. Carbon particles may also collect on surrounding surfaces as soot.

Fire is self-perpetuating; the heat of the flame keeps the fuel at the ignition temperature, so it will continue to burn as long as there is

fuel and oxygen available. The heat that starts the combustion process can come from lots of different things: a match, lightning, focused light or friction.



VICTORINOX

For more information or to

download the resource packs.

visit scouts.org.uk/victorinox.

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Making fire using a bow drill

A bow drill uses the friction between two pieces of wood to create embers that can then be used to start a fire. The motion of the drill turning in the hearth baseboard creates ash and ember, which is then offered up to the tinder to create a flame.

Visit scouts.org.uk/ victorinox for a step-by-step activity sheet on how to make a bow drill and find out about other methods of fire lighting. Bearing block/socket

Bow

Tinder

into the bow and is held between the hearth board and bearing block. The bow is then

The drill is twisted

2 moved backwards and forwards quickly, making the drill rotate and rub against the hearth board causing friction.

3 A noteh is cut out in the hearth board where a small pile of ash collects underneath the drill.

4 The ash becomes so hot that it eventually ignites and begins to smoulder. This smoking ember is then added to the tinder and blown until it bursts into flame.

Hearth board

Drill

Ember pan

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