

Outdoor Leader Skills Fire Building



First a curl of birchbark as dry as it kin be,
Then some twigs of softwood dead, but on the tree,
Last o' all some Pine knots to make the kittle foam,
An' thar's a fire to make you think your sitting right at home.

Ernest Thompson Seton
First Chief Scout Executive



◇ Before you start, what do you want to get from your fire?

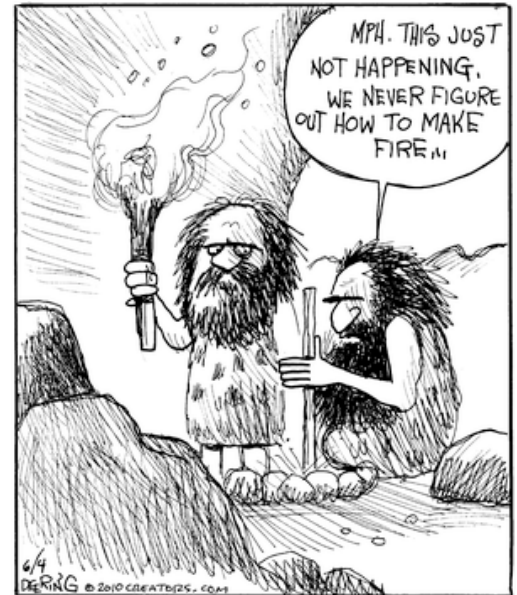
- Warmth
- Cooking
- Council / Friendship / Camp fire
- Signaling

◇ How do you get a fire?

Ignition source → Dry tinder or starter → Kindling → Fuel + Oxygen = Fire.
Each “link” must provide enough heat to light the next material in the chain.

◇ What style of fire construction (or “lay”) should I use?

- Tee Pee
- Lean-To (angled stick) (improved tee pee)
- Lean-To (small log)
- Fire Stick (modified lean-to with log)
- Chimney
- Council (large chimney)
- Hunter's
- Dutch Oven (OK, strictly speaking, this is not a fire lay)



◇ What sort of fuel should you use? What is available?

- Soft woods (e.g., pines, fir) burn quickly, are easy to prepare (i.e., splitting or shaving), but make poor coals.
- Hard woods (e.g., oak, ash) burn slowly, can be difficult to prepare, and leave good coals.
- Charcoal is easy to prepare and makes great coals.

◇ What sort of ignition device can you use?

There are probably more ways to start a fire than you can rub a stick at.

Options include:

- wooden matches
- bow & drill
- cigarette lighter
- chemicals (2 part)
- magnesium & fint
- 9v battery (with 0000 steel wool)
- paper matches
- magnifying glass
- flint and steel
- butane grill starter

Stick matches, either the strike-on-box or strike anywhere, stored in a waterproof match safe are the simplest to use and most versatile. It also impresses the Scouts that you lit a “one match” fire. Paper matches tend not to burn too long and are sensitive to moisture. Grill starters (basically a lighter with a snout) are probably the easiest to use and most have safety locks. “Bic” type lighters can be accidentally drained of fuel and you usually can’t drop a lit one into the fire lay. Flint and steel is a good back-up ignition source (and it’s a useful skill to teach the Arrow of Light Scouts as they cross into Boy Scouts). A magnifying glass, bow & drill or chemicals can be used, but are generally not worth the trouble for a “routine” fire.

◇ What tinder should you use?

There are more choices for tinder than for ignition. Some are:

- Wood shavings (various)
- Inner bark (e.g., elm, cedar)
- Pine cones
- Magnesium shavings
- Natural dryer lint
- Commercial tinder
- Cattails
- Pine needles
- Router debris
- Thin (match-stick sized) twigs
- 0000 steel wool (+ 9v battery)
- Birch bark

Wood shavings are a readily available natural tinder and can be made on site or with a wood plane at home. Dry pine cones propped top down can work, although they don't always light with a match. Similarly, dry pine needles can help, but, like dry leaves, the quantity involved doesn't always produce enough heat to light the kindling. Magnesium blocks seem almost impossible to use. Dryer lint (not from synthetic items) makes an excellent tinder. What can be crammed into a film can and kept dry should be enough, when fluffed, to start your fire. Dry twigs, about the thickness of a wooden match, can work as well. Gather at least a handful or two. Everyone can collect some while you hike / set up camp.

◇ How about using a fire starter?

When you can't count, or don't want to count, on tinder as the second link in the chain of fire, you can use a commercial or homemade fire starter. For



"It seems we're really onto something big, yet a key element is still missing. What we need to make the cognitive leap is a spark, so to speak, of innovation."

a Cub campfire, it's nice to have a "guarantee" that the fire will start. (It's pretty good for older Scouts, too.) Here are some examples of alternatives to tinder:

- Rolled newspaper dipped in wax (e.g., "firebug")
- Wax & sawdust in egg carton sections
- Commercial wax & wood starters
- Fire paste
- Candles

Firebugs are made with strips of newsprint, rolled, tied with cotton string, and dipped in wax and left to harden. The next type uses melted wax mixed with saw dust (or shavings), then poured into an egg carton, left to cool, then broken into sections. Commercially prepared wax squares or sticks will save the mess. They are also good for starting charcoal in a "chimney". Fire paste is tough to find. Candles, regular or "trick" birthday, are OK as a back-up, but can be easily blown out. (Note: BSA policy forbids the use of liquid fuels as fire starters.)

◇ What about kindling and fuel?

Kindling should consist of sticks or split pieces about the diameter of your forefinger. Your fuel should be no bigger than your wrist for almost any Cub Scout fire you might make. A council fire, a multilayered chimney lay, that needs to last for a hour or more might use thicker pieces (although more thin pieces placed in the layers would work as well). One of the goals of a successful low-impact campfire is to not leave big chunks of charred wood behind. Only downed (or "found") wood should be used unless specific permission is given to use dead tree branches or wood that is already cut.

◇ What wood tools do I need?

You should be able to prepare your wood with a hand ax (e.g., 12 - 14" long), a small bow saw (e.g., 18" long) and a pocket knife for wood shavings or split kindling.

◇ How about fire safety?

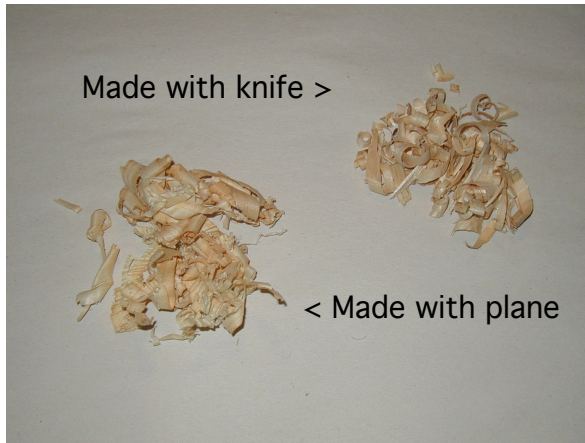
The fire must always be under the control of adults or responsible Scouts. There should be a 10 foot “Circle of Safety” that is cleared of loose flammable material. If a fire ring (e.g., upside-down truck wheel or ring of stones) is already in place, use that to minimize the negative effect to the site. A means of extinguishing should be at hand (e.g., bucket of water, sand or dirt). Wood placed in the fire should stay in (read: used marshmallow sticks) and fuel should be added with the end in mind. If there was the right quantity of fuel (say, for a friendship campfire), you probably will not have to add fuel and extinguishing should be easy. First spread out the embers, then add some water or dirt and stir. Repeat until the remains are COLD. If any chunks of charred wood are left, remove them with your trash or spread in the brush to biodegrade. You can stack any leftover unused wood for the next fire or next group.



◇ How about a fire permit?

There might be a permit required by the local fire department or park ranger. Inquire before you plan the campfire.

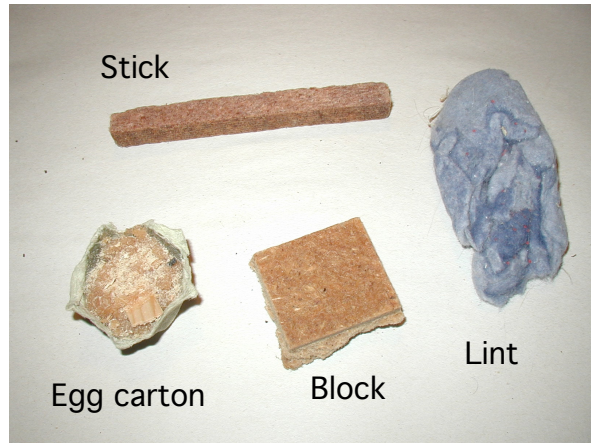
Everyone's favorite cattle drive companion:
Smoke Magnet McGee



Made with knife >

< Made with plane

Wood shavings



Stick

Egg carton

Block

Lint

Fire starters



Twigs

Made with knife from split fuel scraps.

Kindling



Fuel (found & broken by hand)



Fuel (split with hand ax)



Tee pee



Chimney (or cabin)



Lean to (on a log)



Lean to (on an angled stick in ground)



Fire stick ("lean-to" log will burn, too)



Hunter's (fire -> coals -> other end)



Dutch oven
(coals are unlit for photos)



Dutch oven on a fire pan.
Pan has an insulating layer of sand.
Optional: can support pan on bricks.
(A lid lifter is on the right.)



Dutch oven on a Chippewa kitchen
or camp table with optional legs.
Uses insulating air to protect ground.
“Chimney “ charcoal starter on the right.
Note water bucket & tongs for coals.



Platform of logs on snow



An actual fire on the snow