



IOLS

Camping Stoves Overview and Basic Fire Building

Prepared. For Life.®





Overview

Things we will cover;

- Stove use, safety, and fuels. Including;
 - Personal or Backpacking stoves
 - Patrol or group camp stoves
- environmental and safety concerns when selecting a campfire site
- the rationale for using a fires and whether or not you would use a fire or a stove
- prepare and building a safe and environmental sound fire
- types and functions of common fire starting material and how to light the fire
- how to return the fire site to the way you found it

Prepared. For Life.®





Stoves - Introduction

- With the emphasis on Leave No Trace becoming fairly main-stream, alternatives to the campfire have become Big Business. Rather than burning up all the natural vegetation in a highly used area or in a pristine wilderness area, many campers and backpackers are choosing to make less of an impact by curtailing their appetite for fire.
- There are many diverse products now available to replace cooking fires - and if you are doing without a campfire, that really is the main requirement needed. By properly fueling and insulating your body, you do not need an external fire for warmth. So, alternatives to campfires are really stoves for preparing food.
- There are many stoves from which to choose, all with specific Pros and Cons, from types of fuel used, to weight, to cooking speed.

Prepared. For Life.®





Choose Your Stove need

Patrol or Group Camp stoves

Larger multi-burner stoves

- For cooking large meals in pots and skillets for a Patrol or other group of people.
- Usually heavy duty and meant for a base camp use
- Usually more economical per use

Personal or stoves for backpacking

Single burner stoves

- For cooking a single meal for a single person
 - *Primarily used for boiling (or melting) water*
- Light weight, primarily used when backpacking
- Usually more expensive per use

Prepared. For Life.®





Multi-Burner Stoves



Propane



Dual Fuel
White Gas or Unleaded Gas



White Gas



Propane



Propane Converter



White Gas
Prepared. For Life.®



Single Burner Stoves



White Gas



Butane / Isobutane /
Propane



Dual Fuel



Propane



Alcohol



Solid Fuel



Wood



Prepared. For Life.®



Why have a Campfire?

Warmth

Warmth from the fire makes you feel good, and small fires brings everyone close together.

Cooking

The heat of the fire can be used for cooking

Entertainment

It is the number one thing to include on a Scout campout.

- A good time for story telling, skits and jokes.
- The building of comradely and of lifelong friendships

Prepared. For Life.®





Campfire - Warmth

Warmth from a fire helps your body feel better on a cold camping trip. There are other ways to stay warm and you really shouldn't be relying on a fire for keeping your temperature up, but it is a comforting warmth. The heat from a fire is also very useful for drying out clothing and warming water which can be put in a bottle and placed in a cold sleeping bag to cut the chill. Fire heat has many uses and is the basic reason for having a fire. You don't need a huge, roaring fire for warmth. Having a smaller fire and coming in close around it works just as well and conserves fuel.



Prepared. For Life.®





Campfire - Cooking

The Heat from a fire is often used to cook food. This warmth feeds your body from the inside which is the only real way to keep your body temperature up. You may simply boil water and add dried food or cook food right over the fire.

- A cooking fire should be done on a bed of coals and not flames. Flames will cause soot on the pots and pans



Prepared. For Life.®



Campfire - Entertainment

- The campfire is called the *Wilderness TV*. It is easy to sit and watch the flames play for hours while someone tells stories. The flames of a campfire are soothing and always changing. As a campfire dies down to coals, the night slowly takes over and you know its time to crawl into your sleeping bag until the morning.
- Entertainment fires are better with flames to throw light on the story teller. After dinner, adding more fuel to the fire for the campfire program starts the evening's entertainment.



Prepared. For Life.®





Prepare to build a Campfire

A fire needs to be safe, functional and environmentally sound

What are a few things to consider?

- Decide what the primary purpose of the fire will be
Warmth, Cooking, or Entertainment
- Site selection
Make sure that it will be safe (area conditions, access to water, etc)
Make sure that it will fit the purpose
Make sure you have the tools to keep the fire contained if needed
- Fuel selection
Why does fuel selection make a difference?
For cooking fires you want to keep feeding small things that will keep burning, you'll want coals
For an Entertainment fire you'll want to build something that will last for the whole program rather than having to keep tending the fire since that could distract from the program

Prepared. For Life.®





What is needed for a Fire?

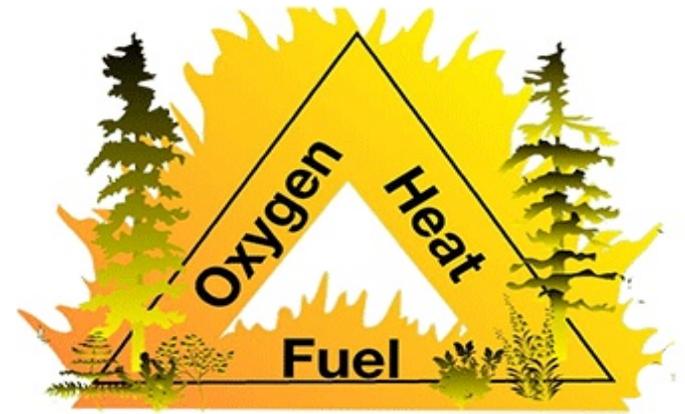
In order to make a fire you'll need

Heat - Something to start the fire.

Fuel - Things that burn.

Oxygen - Don't cut off the air.

This is called the fire triangle



If any one of these things is missing, the fire WILL go out.





How to Start a Campfire

In order to build a successful fire you'll need 3 things;

Tinder

- Dry combustible things such as leaves, grass, dryer lint, etc.

Kindling

- Small dry sticks and twigs, no larger than your finger

Fuelwood

- As large as kindling but no larger than your wrist.

How much tinder and kindling do you need to gather before starting a fire?

- The traditional amount recommended for Boy Scouts was “enough to fill your hat.” Of course, a more skilled fire builder needs much less.

Prepared. For Life.®





Campfire Prep - Tinder

Your fire starts from tinder - without tinder, no fire. In modern times, a match serves the purpose of spark and tinder. So, you could possibly skip tinder if you have a good supply of matches. But, starting with a small pile of tinder will make things so much easier for you.

- Dry and fluffy
- Tinder is no larger than a needle or a string.
- can be any dry, easily lit, shredded material. Some good examples include cedar bark, grass, pine needles, wood shavings, pitch, milk weed fluff, char cloth, clothes dryer lint, or wax.

Finding tinder can be a challenge in damp weather, but that is when it is most important. You can always create wood shaving tinder from inside a split log if all the grass and bark is damp or keep some char cloth in your fire kit.





Campfire Prep - Tinder (Natural)



Grasses



Weed and seeds



Pine needles



Leaves



Inner Bark



Outer Bark

Prepared. For Life.®



Campfire Prep - Tinder (Scout Provided)



Cotton Balls (100% cotton only)



Dryer lint (from 100% cotton towels)



Pringles, Cheetos or other greasy snack foods



Prepared. For Life.®





Starting the Campfire

- **Matches** - there are many specialty matches for fire starting and some tricks to keep your matches usable.
- **Lighters** - liquid fuel lighters are quick and easy, but can be dangerous and untrustworthy.
- **Spark** - tools to generate a spark to ignite your tinder.
- **Friction** - have fun with some primitive fire making methods. It's not as easy as rubbing two sticks together.
- **Pressure** - fire pistons ignite tinder by increasing air pressure.
- **Electricity** - Steel wool and a battery
- **Sunlight** - Use a magnifying glass, water, ice, or pop can to start a fire (works best if using a Char Cloth)

All of these methods do work to start a fire - but not all the time. You need to have certain weather conditions or selected pieces of wood or a lot of luck. But, the idea is to be familiar with different methods of starting fires so you can be a fire starter in the broadest possible range of situations.

Prepared. For Life.®





Campfire Prep - Kindling

Once tinder has caught fire, it's heat can get larger pieces burning. These larger pieces are called kindling and they are not really all that big. Kindling is usually little splinters of wood, small twigs, or fuzz sticks. Take your time and build from miniscule to tiny to small to healthy flames..

- Splinters of wood, small twigs or fuzz sticks
- typically has the diameter of a match up to the size of a pencil.
- You should be able to snap kindling with your hands

Just as with tinder, it is important to have dry kindling. If its damp, split wood and collect the dry inner bits. Even split small sticks and twigs to expose the dry inner surfaces. Use a knife to whittle away the damp bark before using sticks if necessary. Pine makes better kindling than the hardwoods because it is easier to split down and catches faster.

Prepared. For Life.®





Campfire Prep - Kindling



Bundles of small twigs



Pencil size twigs



Fuzz sticks



Prepared. For Life.®



Campfire Prep - Fuelwood

Fuelwood is the life of the campfire. There is a heart of hot coals now and as long as you continue to feed fuel, the fire will continue to live. Fuelwood can be damp because the heat of the fire will dry it and then it will combust. But, don't be tempted to stack damp wood close to your fire in the hopes of drying it out - that is just asking for trouble.

Different woods have different burn qualities. Hardwoods such as oak and maple burn hot and long while pine burns fast with more soot. Depending on the environment, you may not have much choice in your wood selection.

Even though there are three main categories of fuel - tinder, kindling, and fuelwood - use your brain and understand that there are really fuzzy lines between the categories. A particular stick could be kindling or fuelwood, depending on the current size of the fire and how big it needs to be.

Prepared. For Life.®





Campfire Lays

The way you assemble your wood before lighting it is called the *Fire Lay* and there are a few classic methods to use, depending on what you will use your fire for. They include:

- Lean-to
- Tepee
- Log Cabin
- Council or Pyramid Fire
- Hunter's Fire

Whatever type of fire you decide to make, keep these things in mind.

- Plan where you will light it - leave an opening to reach the tinder.
- Light the upwind side so the wind blows the flame into the fuel.
- Leave air space between pieces of wood.
- Build UP, not OUT. Create a higher pile of wood rather than a flatter pile.

Prepared. For Life.®





Campfire - Lean-to

This fire keeps air space open due to the support stick and a steady, light wind really helps it get started.

- Stick a long, large piece of kindling in the ground at a flat angle. It should point into the wind.
- Place your tinder bundle under the stick.
- Lean very tiny pieces of kindling on the tinder bundle.
- Lean more small kindling against the support stick.
- Lean larger kindling against the first layer.
- You could create a second lean-to of larger sticks over the first lean-to.

This is fun to light, but the most common challenge is burning up all the tinder without catching the kindling because too much air space is left open. Once it gets going, it's fun to anticipate the main support stick burning through and falling.



Prepared. For Life.®





Campfire - Teepee

This is a favorite and many believe the most useful and easiest to light.

- Place your tinder bundle on the ground or on a small piece of bark.
- Stick three or four kindling twigs in the ground to form a teepee above the tinder.
- Lean small kindling twigs against the downwind side of the tinder.
- Leave an opening on the upwind side all the way to the center tinder where you can light the fire.
- Continue to lean twigs around the teepee structure.
- Work your way up to pencil-sized sticks, leaving plenty of air space between sticks.
- Poke three or four pencil-sized sticks into the ground forming a larger teepee structure.
- Lean some smaller fuelwood pieces against this support structure.
- Have additional small fuelwood and kindling ready in case it is needed.



This style produces a fast flame and quickly falls into itself in a pile of coals. The heat is directed up to a single point and is useful for boiling water in a single pot above the teepee. Once the teepee collapses, fuelwood can be laid around it like a log cabin or just criss-cross on top of the flames.

Prepared. For Life.®





Campfire - Log Cabin

This is the most popular style for beginners to build. Many people also add wood to a burning teepee fire to turn it into a log cabin.

- Lay a small teepee fire.
- Lay two larger pieces of fuelwood parallel on opposite sides of the teepee.
- Lay two slightly smaller pieces of fuelwood parallel on the other two opposite sides. Leave a space under the upwind piece through which you can reach the tinder to light it - you might need to fashion a mini-torch and stick it in to light.
- Continue to lay smaller and shorter pieces to form a cabin or pyramid shape.
- Have extra kindling ready to drop into the top or through the spaces on the sides to feed the internal fire until the outer walls catch fire.

This kind of fire makes good coals and is a classic campfire look. Getting it lit is the challenge.



Prepared. For Life.®





Campfire - Council or Pyramid Fire

The big daddy of large group campfires. A council fire burns hot, bright, and for a long time without adding more wood. It does take bigger logs and is meant for entertaining big crowds.

- Lay 4 logs, each about 5 or 6 inches across and 3 to 3.5 feet long, with about 4 inches of air space between logs.
- Across these, lay a platform of about 6 logs, each about 5 inches across and 3 feet long.
- Across this, lay a layer of 4 inch logs, 2.5 feet long.
- Then, two layers of 3 inch logs, 2 feet long, in perpendicular layers.
- Then, 2 layers of 2 inch logs, 2 feet long.
- Then, 2 layers of 1 inch split wood, 18 inches long.
- Make a lot of split kindling sticks and stick them into any open air space in the log layers.
- Create a teepee structure on top of the last layer of split wood.
- Leaving a space to light the teepee, continue placing more split pieces around the teepee to make a few more layers.
- The teepee is lit and the fire burns its way down through the layers.

This fire maintains good flame for a long time as burning fuel drops down into the larger pieces of wood and ignites them. There is no large structural collapse as you might get with a log cabin..

Prepared. For Life.®





Campfire - Hunter's Fire

Good for cooking and has good wind protection. Not useful for entertaining or warming.

- Retrieve two short logs 6 to 8 inches in diameter and place them nearly parallel to each other about 6 inches apart at one end and 3 inches at the other.
- Create small teepee fire between the logs and feed it fuel until there are good coals.
- Use the two logs as a platform on which you set your pots to cook.
- Spread or pile the coals to create hotter and cooler cooking areas.

Prepared. For Life.®





Campfire - Hunter's Fire

Good for cooking and has good wind protection. Not useful for entertaining or warming.

- Retrieve two short logs 6 to 8 inches in diameter and place them nearly parallel to each other about 6 inches apart at one end and 3 inches at the other.
- Create small teepee fire between the logs and feed it fuel until there are good coals.
- Use the two logs as a platform on which you set your pots to cook.
- Spread or pile the coals to create hotter and cooler cooking areas.

Prepared. For Life.®





Putting the Campfire out

So you're done with your fire. Unless you want to break Smokey the Bear's heart, you need to put it out thoroughly. The following guidelines will kill your fire good and dead.

- **Start early.** Putting out a fire completely takes longer than you think. Plan when you're going to bed or leaving and start putting out your fire about 20 minutes before then.
- **Sprinkle, don't pour.** You should have a bucketful of water near your campfire for safety reasons. When it's time to go, this will serve as your fire extinguisher. Avoid the impulse to pour all the water on the fire. You don't want to flood the pit because you or someone else will need to use it later. Instead, *sprinkle* as much water as you need to put out the embers and charcoal.
- **Stir.** As you sprinkle water over the embers, stir them with a stick or shovel. This ensures that all the ashes get wet. When you don't see any steam and don't hear any hissing noises, you know you're getting close to a completely extinguished fire.



Prepared. For Life.®





Putting the Campfire out

- **Touch test.** Don't actually run your hands through the ashes. You don't want to brand yourself with a searing ember. Put the back of your hand near the ashes. If you still feel heat, it's too hot to leave. Keep adding water and stirring. As soon as it feels cool, you're good to go.
- **Dispose the ashes.** You don't want to leave the next camper a fire bed full of old ashes. Also, if you had to create your own fire bed, you want to leave the land in the same condition as how you found it. Scoop up the ashes in a bag and spread them out around in the woods / off the trail.
- **Patch up your ground.** If you made your own fire bed, replace the dirt and sod you dug up.



Prepared. For Life.®





IOLS

Camping Stoves Overview and Basic Fire Building

Prepared. For Life.®

