

# Fire Safety and Fire Building

## Introduction

To earn this certification, the Scout must show his Scout leader, or someone designated by his leader, that he understands his responsibility to do the following:

- Read and understand fire use and safety rules from the Boy Scout Handbook.
- Secure necessary permits (regulations vary by locality).
- Clear all flammable vegetation at least 5 feet in all directions from fire (total 10 feet).
- Attend to fire at all times.
- Keep fire-fighting tools (water and/or shovel) readily available.
- Leave fire when it is cold out.
- Subscribe to the Outdoor Code and Leave-No-Trace

The Scout's "Fireman's Rights" can be taken from him if he fails in his responsibility. (In most troops, they tear off a corner from the wallet card for any minor infraction. When all four corners are gone, the scout loses his fireman rights.

In Troop 195 we tear off 3 corners of the wallet card when the scout is first presented with it. This is done because an infraction can be dangerous involving fire and Troop 195 is so safety conscience, our scouts don't get a second chance and have to earn the privilege again)

Campfires have always been an important part of Scout camping. A fire can warm you, cook your meals, and dry out your clothes. Bright flames lift your spirits on a rainy morning. On a starry night, glowing embers stir your imagination. The smell of campfire smoke and the crackle of burning wood are among the best memories of adventures gone by.

A good Scout knows how to build a fire. He also knows when he should not build one. Campfires can char the ground. Fires consume dead branches, bark, and other organic material that would have provided shelter and food for animals and plants. In the days when not many people went camping there weren't enough fires to cause problems. But today, hiking and camping are popular activities. Hundreds of fires can have a serious impact on the well-being of the backcountry.

Before a campout, learn whether campfires are allowed in the area you plan to visit. Find out if there will be enough firewood. You may need permits to build fires in public parks and forests. Your Scoutmaster will help you get the permission you need.

If fires are not allowed, you can still go camping. Backpacking stoves are lightweight, easy to use, and clean. Properly handled, they are a good alternative to campfires.

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## Camping Stoves



Many camping stoves burn kerosene or white gas. Store these fuels in special metal bottles with lids that screw on tightly. Choose bright red bottles or mark them with colorful tape so there is no chance of mixing them up with your water bottles.

Butane and propane stoves burn gases from small cans called cartridges. Cartridges and fuel bottles should be stowed in plastic bags and carried.

When you're ready to cook, place your stove on a flat surface. A patch of bare ground or a flat rock is all you need. In winter, put your stove on a 6-inch square of plywood. The wood will hold your stove on top of the snow and prevent the cold ground from chilling the stove.

Larger kerosene and white gas stoves are too heavy to carry in a pack, but they are fine for use in camps that can be reached by road. Two or three burners give you all the room you need to cook meals for an entire patrol. Different kinds of stoves operate in different ways. Read your stove's instructions carefully and do exactly what they say. In addition, always follow these safety rules:

- Use camping stoves only where allowed and only with adult supervision.
- Never use a stove inside a tent or cabin. There is a danger of fire and poisoning by odorless gas fumes. Refuel and light stoves outdoors where there is plenty of fresh air.
- Before lighting the burner, tighten the caps on the stove and on any fuel containers. Do not loosen the fuel cap of a hot stove.
- Stoves sometimes flare up. Keep your head and hands to one side of the stove as you light and adjust it.
- Don't overload a stove with a heavy pot. Instead, set up a grill over the stove to bear the weight of the pot.
- Never leave a lighted stove unattended.
- Let hot stoves cool before refilling fuel tanks. Refill stoves and store extra fuel well away from open flames such as other stoves, candles, and lanterns.

- Carry home all empty fuel containers. Do not place them in or near fires. If heated, they may explode.

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## Campfires

A safe fire is one on which nothing will burn except the fuel you feed your fire. It's a spot from which flames cannot spread. Parks and Scout camps may have large metal rings, grills, or stone fireplaces. Use these existing sites whenever you can.

Otherwise, select a spot on gravel, sand, or bare soil well away from trees, brush, dry grasses, and anything else that might burn. Look overhead for branches that sparks could ignite. Stay clear of boulders that may be blackened by smoke, or large tree roots that might be harmed by too much heat.

Clean the fire site down to bare soil, then remove all burnable material from the ground around it. Rake away pine needles, leaves, twigs and anything else that might burn. Save the ground cover so you can put it back when you are done with your fire. Keep a pot of water close by to douse the flames should they begin to spread.

### ***Bare Ground Fire Site***

When the ground is bare, haul enough mineral soil to the center of the cleared circle to make an earthen pad about two feet square and three inches thick. Kindle the fire on top of the pad, and the mineral soil will protect the ground from the heat. After you have properly extinguished the blaze and disposed of any unburned wood, crush the remaining ashes, mix them with the mineral soil, and return it to the sites from which you borrowed it.

### ***Gather Tinder, Kindling, and Fuel wood***

Patience is the key ingredient for successfully building a fire. You will also need tinder, kindling, and fuel.



	<p>Dead twigs that are no thicker than a pencil are called kindling. Find enough to fill your hat twice.</p>
	<p>Fuel wood can be as thin as your finger or as thick as your wrist. Use sticks you find on the ground and gather them from a wide area rather than removing all the downed wood from one spot.</p>

### ***Lay the Fire***

There are many ways to arrange tinder, kindling, and fuel so that the heat of a single match can grow into flames of a campfire. A tepee fire lay or log cabin is a good all-around method:

1. Place a big, loose handful of tinder in the middle of your fire site.
2. Mound plenty of small kindling over the tinder
3. Arrange small and medium-sized sticks of fuel wood around the kindling as if they were the poles of a tepee. Leave an opening in the "tepee" on the side the wind is blowing against so that air can reach the middle of the fire.
4. Ease a burning match under the tinder. The flame should rise through the tinder and crackle up into the kindling and the fuel wood above.

### ***Fuzz Sticks***



Fuzz sticks can help get a fire going. Cut shavings into each stick, but leave them attached. Prop the fuzz sticks upright in among the kindling.

### ***Fireplaces***

A fireplace holds your cook pots above the flames and allows air to reach the fire.

#### ***Three-Point Fireplaces***

For a single pot or pan, stick three metal tent stakes into the embers.

### ***Wet-Weather Fire Tips***

1. Before the rain begins, gather tinder and kindling for several fires and store it under your dining fly.
2. Keep a supply of dry tinder in a plastic bag.
3. Split your wet sticks and logs with an ax. The wood inside should be dry.
4. Keep matches safe from dampness by carrying them in a plastic container with a tight lid.
5. A butane lighter will give you flame in even the wettest weather. Store it away from heat.

### ***Putting out a Campfire***

Extinguish every fire when you no longer need it. Make sure it is cold out - cold enough so that you can run your hands through the ashes. Trickle, don't pour water on the embers, steam is hotter than boiling water and ash will go everywhere if you pour. Stir the wet ashes with a stick and wet them again. Repeat until you can touch every part of the fire site with your bare hands.

### ***Cleaning a Fire Site***

Clean a permanent fire site by picking out any bits of paper, foil, and unburned food. Pack them home with the rest of your trash. If you made a new fire site, erase all evidence it was ever there. Scatter any rocks, turning their blackened sides toward the ground. Spread cold ashes over a wide area and toss away extra firewood. Replace any ground cover. When you're finished, the site should look just as it did when you found it.

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## **Fire Types, Wood Types**



Figure 1 - Log Cabin Fire

Probably the most useful and easiest to light fire. Works good in high wind and rain. Used as a general campfire, ceremonies, etc. You can actually time this fire by the number of logs and their size. It is possible to make a 28 minute fire or 43 minute fire, etc... A small version of this is the best way to start a fire.



Figure 2 - Star Fire

This is basically one of the simplest fires to make.



Figure 3 - Trench Fire

This is the most commonly used Scout fire because it is easy to build. Build it so that the shallow end of the trench faces into the wind. This will make it burn very hotly because the air is directed into the heart of the fire.



Figure 4 - Gypsy Fire

This is an excellent fire for using a cooking pot. Stews cook very well on this type of fire and it is also useful for boiling bilious of water for hot drinks. .



Figure 5 - Fire in a hole

This is very much like the Gypsy Fire, but the wood will slide downwards into the heart of the fire and help reduce the need for continually monitoring it. Very useful if there are other things to do as well as cooking because it allows you to move away for short periods of time.

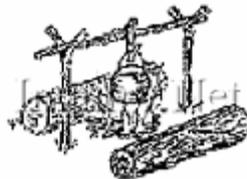


Figure 6 - Lumberman's Fire

Again this is very like the previous two fires, but the logs to either side act as wind shields and allow the air to be directed into the heart of the fire. Good for supporting cooking pots, or spit roasting.

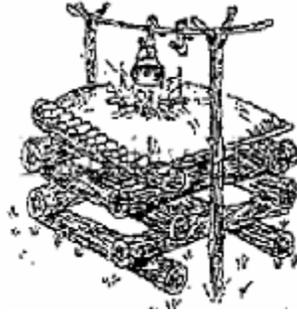


Figure 7 - Alter Fire

This type of fire is ideal for long stay camps as it helps eliminate the-need for turf removal and low-level cooking. Watch the height you build to. It is much safer to have it too low than too high.



Figure 8 - Reflector Fire

The Back shielding on this type of fires reflects the heat forward. Very useful for directing heat into the bivouac.



Figure 9 - Backlog Fire

This fire again is useful for supporting cooking pots, but has no overhead support. The logs act as shields.



Figure 10 - Fuzz Stick

Sometimes there are not enough small twigs and sticks around to start a fire with. Resourceful Scouts will always be able to make themselves "fuzz sticks" which, because of their curls of wood, catch fire more easily than a solid stick. Something for whittling away those spare moments of 'nothing to do'.

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## The Burning Properties of Wood

Below is a list of the most common woods for burning, there are more. It is worth remembering that ALL wood will burn better if split.

There is an old saying, "before starting a fire - collect the right wood." It is worth learning which wood is best for your fires as it will make life a lot easier. A natural result of tree recognition is to learn the burning properties of their wood

Wood	Description
Alder	Poor in heat and does not last
Apple	Splendid/ It bums slowly and steadily when dry, with little flame, but good heat. The scent is pleasing.
Ash	Best burning wood; has both flame and heat, and will bum when green, though naturally not as well as when dry.
Beech	A rival to ash, though not a close one, and only fair when green. If it has a fault, it is apt to shoot embers a long way.
Birch	The heat is good but it burns quickly. The smell is pleasant.
Cedar	Good when dry. Full of crackle and snap. It gives little flame but much heat, and the scent is beautiful.
Cherry	Burns slowly, with good heat. Another wood with the advantage of scent Chestnut. Mediocre. Apt to shoot embers. Small flame and heating power. Douglas Fir. Poor. Little flame and heat.
Chestnut	Mediocre. Apt to shoot embers. Small flame and heating power.

Douglas Fir	Poor. Little flame or heat.
Elder	Mediocre. Very smoky. Quick burner, with not much heat.
Elm	Commonly offered for sale. To burn well it needs to be kept for two years. Even then it will smoke. Vary variable fuel.
Hazel	Good.
Holly	Good, will burn when green, but best when kept a season.
Hornbeam	Almost as good as beech.
Laburnum	Totally poisonous tree, acrid smoke, taints food and best never used.
Larch	Crackly, scented, and fairly good for heat.
Laurel	Has brilliant flame.
Lime	Poor. Burns with dull flame.
Maple	Good.
Oak	The novelist's 'blazing fire of oaken logs' is fanciful, Oak is sparse in flame and the smoke is acrid, but dry old oak is excellent for heat, burning slowly and steadily until whole log collapses into cigar-like ash.
Pear	A good heat and a good scent.
Pine	Burns with a splendid flame, but apt to spit. The resinous Weymouth pine has a lovely scent and a cheerful blue flame.
Plane	Burns pleasantly, but is apt to throw sparks if very dry. Plum. Good heat and scent.
Plum	Good heat and aromatic.
Poplar	Truly awful.
Rhododendron	The thick old stems, being very tough, burn well.
Robinia (Acacia)	Burns slowly, with good heat, but with acrid smoke.

Spruce	Burns too quickly and with too many sparks.
Sycamore	Burns with a good flame, with moderate heat. Useless green.
Thorn	Quite one of the best woods. Burns slowly, with great heat and little smoke.
Walnut	Good, and so is the scent. Aromatic wood.
Willow	Poor. It must be dry to use, and then it burns slowly, with little flame. Apt to spark.
Yew	Last but among the best. Burns slowly, with fierce heat, and the scent is pleasant.

	Totin' Chip Requirements	Initials	Completion Date
	1. Complete 1 hour of instruction in the proper use and care of woods tools.		
	2. Demonstrate the proper care of woods tools.*		
	3. Demonstrate the proper safety rules for woods tool use.*		
	4. Demonstrate the proper use of woods tools.*		
	5. Explain what "the proper tool for the proper job" means.		
	6. Understand and intend to live by the Totin' Chip responsibilities and the Outdoor Code.		
<b>*as per Second Class requirements 2c and 2d.</b>			
	<b>Instructor</b>		
	<b>Scoutmaster</b>		

	Firem'n Chit Requirements	Initials	Completion Date
	1. Complete 1 hour of instruction in proper fire and stove use and safety.		
	2. Demonstrate proper cooking fire building.*		
	3. Demonstrate proper cooking stove use.*		
	4. Demonstrate proper fire safety precautions and that you know what to do in case of a fire.*		
	5. Understand and intend to live by the Firem'n Chit responsibilities and the Outdoor Code.		
<b>*as per Second Class requirements 2e and 2f.</b>			
	<b>Instructor</b>		
	<b>Scoutmaster</b>		

Totin' Chip Responsibilities	Firem'n Chit Responsibilities
<p>I understand that the use of woods tools is a very big responsibility. I will be concerned not only with my safety, but the safety of others while using woods tools. I will use the right tool for the job I am doing.</p> <p>I understand that woods tools are not toys and that it is my responsibility to make sure they are used safely. I will do my best to use woods tools safely myself, and I will help others learn the safe and proper way to use</p>	<p>I understand that the use of fires and stoves is a very big responsibility. I will be concerned not only with my safety, but the safety of others while using stoves, or building fires. I will use the right tool for the job I am doing.</p> <p>I understand that campfires and stoves are not toys and that it is my responsibility to make sure they are used safely. I will do my best to use campfires and stoves safely myself, and I will help others learn the safe and proper way to</p>

them by my example.

I will do my best to live up to the responsibilities I have been given, and to live by the Outdoor Code. I understand that if I fail to take this responsibility seriously, it can be taken away.

Signed:

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I will do my best to live up to the responsibilities I have been given, and to live by the Outdoor Code. I understand that if I fail to take this responsibility seriously, it can be taken away.

Signed: