

Stoves and Fuel

Advantages

- Leave No Trace: Minimize campfire impact
- A stove will not scar the earth or blacken rocks.
- It burns nothing native to the backcountry.
- It operates reliably under adverse conditions.
- It creates steady heat that won't blacken cooking gear.
- It is quick and convenient enough to heat a midday cup of soup.
- It makes travelers self-sufficient, able to camp high on a rocky mountain, deep in a treeless desert, or in the drifts of a snowy forest.

Disadvantages

- It requires the handling of flammable liquid or gaseous fuels.
- It must be carried and kept in good working condition.

Guide to Safe Scouting note on fuels and fire prevention: **The use of liquid fuels for starting any type of fire is prohibited.**



Choosing a stove

You'll not find one ideal stove for all occasions; these general tips should help you choose.

Weight and size: Some excellent stoves weigh far too much and take up too much room to be practical in the wilderness. Happy cooks choose a stove that packs easily and weighs in between a pound and a pound and a half when empty of fuel.

Heat Output intensity and range: The more intense the heat, measured in BTUs, the less time it takes to boil water. Efficient stoves will boil a quart of water in less than five minutes. But intense heat is not something you'll want all the time. Chefs need to be able to turn the heat down in order to simmer some fine meals.

Ease of operation: A stove that starts easily and handles easily, even in cold weather, is the stove you want.

Stability: Stoves that wobble when you set a pot on the burner are likely to dump your well-earned gourmet meal in the dirt. Choose a stove with a stable base, one that has an adequate pot-supporting surface and a relatively low profile.

Windscreens: Wind reduces the efficiency of your stove. Wind can snuff out the flame when you need it most. You can't control the wind, but you can choose a stove with a windscreen, or one for which you can make a windscreen.

Durability: Packs with stoves stuffed inside get dropped, sat



on, stuffed into trunks of cars, and banged against trees. Choose a stove that can withstand the punishment.

Accessories: Some stoves come with a fuel bottle. That's nice. Some stoves come with a stuff sack. That's nice, too. protective sacks add to the life expectancy of your stove. Some stoves come with repair kits. You don't want to be far from home without a stove repair kit.

Fuel used: In the United States any fuel you want is available. In many foreign countries fuel types are limited. Make sure your stove will utilize the fuel you'll have available.

Cost: The amount you pay does not necessarily indicate the efficiency of the stove for your purposes. Choose the stove that will work best, and then decide how to pay for it.

Stove Fuels

Alcohol: Heat output is low. Flammability is high. Burns clean, and spills evaporate quickly without residue.

Automotive gasoline: Use unleaded only; leaded gas produces toxic fumes when burned. Explosions are possible. Heat output is high. Flammability is also high. Stoves may clog with prolonged use.

Butane: Must be carried in cartridges. Burns clean. Most cartridges can't be changed until they're empty, and heat output goes down as fuel runs low. Easy to use. Flame reduced by cold temperatures. Keep above freezing.

Butane/propane mix: Must be carried in cartridges. Burns clean. Easy and safe to use. Performs well at high altitude and in cold temperatures.

Kerosene: Heat output high. Flammability lowest of all fuels, but it smells. If you spill some, it remains oily, unlike other fuels that evaporate quickly.

Propane: Must be carried in cartridges. Burns clean. Easy and safe to use. Performs well in cold.

White gas (or naphtha): Heat output is high. Flammability is high, and explosions are possible. Burns clean. Much cheaper than cartridges of fuel. Works well at high altitude. Works well in cold although preheating burner might be required.



Tips for Figuring Liquid Fuel Needs

On summer trips figure 1/6 of a quart per person per day (PPPD). That's 3/6 or a half quart per person for a 3-day trip; 1 quart per person for a 6-day trip.

On fall/spring trips figure a 1/4 quart PPPD, more if you're traveling in a cold climate and/or at higher altitudes.

On winter trips or at high altitude, figure a 1/2 quart PPPD, especially to melt snow. Better safe than sorry.

Stove Maintenance Tips

Keep your stove covered when you're not using it. Carry it in a stuff sack or kit. Keeping dirt and dust out of your stove prolongs its life and reduces maintenance.

Using a cover on pots while cooking reduces the amount of fuel you'll use.

Carry and store stoves and fuel well separated from foods.

Carry fuel in containers made for carrying fuel.

Try new stoves in your backyard before heading out on the long trail.

Practice taking your stove apart at home in case you have to repair it in the field. Carry a stove repair kit.



Guide to Safe Scouting

flammability warning: Only flashlights and electric lanterns are permitted in tents.

No flames in tents is a rule that must be enforced.

Guide to Safe Scouting:

Safe Use of Chemical Stoves and Lanterns

- 1) Use compressed- or liquid-gas stoves or lanterns only with knowledgeable adult supervision and in Scout facilities only where and when permitted.
- 2) Operate and maintain according to manufacturer's instructions included with the stove or lantern.
- 3) Both gasoline and kerosene shall be kept in well-marked, approved containers (never in a glass container) and stored in a ventilated, locked box at a safe distance (a minimum of 20 feet) from buildings and tents. Keep all chemical fuel containers away from hot stoves and campfires, and store below 100 degrees (F).
- 4) Let hot stoves and lanterns cool before changing cylinders of compressed gases or refilling from containers of liquid gas.



- 5) Refill liquid-gas stoves and lanterns a safe distance from any flames, including other stoves, campfires, and personal smoking substances. A commercial camp stove fuel should be used for safety and performance. Pour through a filter funnel. Recap both the device and the fuel container before igniting.
- 6) **Never fuel a stove, heater, or lantern inside a cabin; always do this outdoors. Do not operate a stove, lantern, or charcoal grill in an unventilated structure. Provide at least two ventilation openings, one high and one low, to provide oxygen and exhaust for lethal gases. Never fuel (example: all liquid fuels, charcoal, etc.), ignite, or operate a stove, heater, or lantern in a tent.**
- 7) Place the stove on a level, secure surface before operating. On snow, place insulated support under the stove to prevent melting and tipping.
- 8) Periodically check fittings on compressed-gas stoves and on pressurized liquid-gas stoves for leakage, using soap solution before lighting.
- 9) To avoid possible fires, locate gas tanks, stoves, etc., below any tents since heavy leakage of gas will flow downhill the same as water.
- 10) When lighting a stove, keep fuel containers and extra cannisters well away. Do not hover over the stove when lighting it. Keep your head and body to one side. Open the stove valve quickly for two full turns and light carefully, with head, fingers, and hands to the side of the burner. Then adjust down.
- 11) Do not leave a lighted stove or lantern unattended.
- 12) Do not overload the stovetop with heavy pots or large frying pans. If pots over 2 quarts are necessary, set up a separate grill with legs to hold the pot, and place the stove under the grill.
- 13) Bring empty fuel containers home for disposal. Do not place in or near fires. Empty fuel containers will explode if heated and should never be put in fireplaces or with burnable trash.

