

A Quick View of Emergency Lighting, Cooking, and Heating

General Tips

1. **USE CAUTION:** Burning any fuel uses up oxygen and can produce carbon monoxide. Always use emergency stoves/ovens/grills in a well-ventilated location. Charcoal should never be used indoors because it produces high levels of carbon monoxide.
2. Store at least enough fuel for two weeks, at best enough fuel for a year. Do not store flammable products in a living space. Store wood a safe distance from the house.
3. Store matches in a waterproof container. Store alternate methods for starting a fire: a lighter, flint and steel, steel wool and a 9-volt battery, magnifying glass, etc. Store tinder: “jelly donuts” (cotton ball & petroleum jelly), a magnesium bar, lint, etc.
4. Be as efficient as possible in order to conserve fuel.
 - a. Plan meals ahead to consolidate cooking time.
 - b. Cook only what you need.
 - c. Use efficient cooking containers, such as a pressure cooker or insulating “wonderbox”.
 - d. Extinguish the fire as soon as you finish.
5. Practice ahead of time!

Lighting

1. Store a variety of lighting methods: flashlights, candles, lanterns, etc.
2. Batteries. Alkaline batteries have a shelf life of 3-5 years. Do not leave batteries in flashlights for extended periods because they leak.
3. Flashlights. Use headlamp flashlights in order to have free hands. Avoid flashlights that require constant squeezing to produce power—your hand will tire very quickly. LED lights require less power.
4. Candles.
 - a. Liquid paraffin candle: burns for 100 hours; stores indefinitely. (~\$4)
 - b. Paraffin wax candle:
 - $\frac{1}{2}$ ” diameter x 4” tall = burns 2 hours 20 minutes
 - $\frac{7}{8}$ ” diameter x 4” tall = burns 5 hours
 - 2” square = 7 hours per inch

Short-term Emergency Cooking

1. Backpacking/bullet stoves (~\$30-\$200, Jetboil Flash ~\$100)
 - Use canned butane gas, although a few can use a propane adaptor.
 - Pros: boils food quickly, lightweight, easy to use.
 - Cons: expensive; small (more useful for one or two individuals than families); dependent on a specific fuel; butane freezes.
2. Fold-up stove (~\$6-\$68, Lixada ~\$12)
 - Can use with many fuels: canned fuel, spirit burner, charcoal, wood, etc.
 - Pros: compact; inexpensive; works with many fuels; some are very lightweight (~5 oz.).
 - Cons: gets sooty; some are heavy (~16 oz.).
3. Gasifier stove (~\$18-\$70, Lixada ~\$23)
 - Assembles easily from four to five parts.
 - Can use with many fuels.
 - Pros: double-walled combustion chamber provides efficient burning; compact.
 - Cons: more expensive than simple foldup stoves.

4. Fuels

- a. Canned liquid fuel (ethylene glycol or diethylene glycol) (Sam's Club Daily Chef ~\$1-\$2)
 - Burns for ~6 hours.
 - Pros: easy to use; indefinite shelf-life; odorless.
 - Cons: produces only a moderate heat.
- b. Canned gel fuel (ethanol) (Sterno ~\$3)
 - Burns for ~2 hours.
 - Pros: easy to use; greater heat.
 - Cons: evaporates in storage; noticeable odor; can heat up during use.
- c. Spirit burner (Trangia ~\$15)
 - Uses denatured alcohol, purchased separately (~\$8/qt).
 - One quart of alcohol will cook three meals/day for five days.
 - Pros: reusable for backpacking; fuel stores indefinitely.
 - Cons: expensive for a three-day kit; a quart of alcohol is bulky and heavy.

Long-term Emergency Cooking

1. Rocket stove (StoveTec ~\$121)
 - Pros: efficient; uses half as much fuel; can be used with charcoal or wood. Available fitted pot (~\$86, or stove/pot combo ~\$185) can also be used as an oven. Exterior stays cool. Little smoke.
 - Cons: A little heavy.
 - Wood or Charcoal
 - 6 briquettes will burn at 350 degrees for ~1 hour.
2. Propane two-burner stove (Coleman ~\$43)
 - Pros: easy to use; effective control knobs.
 - Cons: dependent on a specific fuel; needs an additional oven unit.
 - Propane
 - With both burners on high, 1 lb. fuel will burn ~1 hour.
 - A 5-gallon tank equals 20 lb. fuel and will burn ~20 hours.
 - (With both burners on low, a 5-gallon tank will burn ~90 hours.)
 - An adaptor is needed to convert from the disposable cylinder size to regular propane cylinder size. (~\$20)
3. Propane oven (Camp Chef \$210)
 - Pros: easy to use; precise temperature; fits 9" x 13" pan; has two racks; has a window.
 - Cons: expensive; dependent on a specific fuel.
 - Propane
 - 1 lb. fuel will burn ~3.5 hours.
 - A 5-gallon tank equals 20 lb. fuel and will burn ~70 hours.
 - An adaptor is needed to convert from the disposable cylinder size to regular propane cylinder size. (~\$20)
4. Camp oven that fits over a camp-stove burner (Coleman) (~\$28)
 - Pros: makes stove also function as an oven.
 - Cons: expensive box; difficult to adjust rack.

5. Barbeque grill for propane

Comes in a wide range of features and costs.

Pros: many families already own a propane grill for everyday use; can fry and bake.

Cons: large grills use a lot of fuel.

Propane

General fuel estimate is 1¼ pints of propane per hour.

Standard 20 lb. propane tank = 5 gallons = 40 pints = 32 hours

6. Barbeque grill for charcoal

Comes in a wide range of features and costs. Choose the smallest grill that will meet your needs in order to use the least amount of fuel possible.

Pros: can be used with charcoal or wood; small grills use less fuel; can fry and bake.

Cons: difficult to start; no top browning.

Charcoal

20 lb. bag of store-brand charcoal costs ~\$15.

Charcoal will store indefinitely when protected from moisture. Store in an airtight bucket or plastic bag. Caution: charcoal can spontaneously ignite when wet.

Each briquette produces ~40 degrees of heat.

1 lb. charcoal = ~11 briquettes, enough for ~one hour of cooking at 400 degrees

To light charcoal:

a. Lighter fluid: store ~1 quart of starter for every 10 lbs. charcoal.

b. Chimney can: funnels heat up through the coals to help them start.

Instructions:

1. Cut both ends out of a #10 can.

2. Provide bottom ventilation by placing the can on a rack or by propping it on stones.

3. Place crumpled newspaper and a few sticks in the can.

4. Place the briquettes on top of the newspaper.

5. Light the newspaper from the bottom of the can.

6. The briquettes will be ready in 20-30 minutes.

7. Remove the can and arrange the coals in your grill.

7. Volcano grill (~\$150)

Uses propane or converts for use with charcoal, wood, etc.

Pros: can be used with many fuels. An oven “tent” (\$30) is now available.

Cons: large; far less fuel-efficient than a rocket stove.

8. Solar oven (~\$300)

Pros: doesn't need stored fuel.

Cons: expensive; dependent on sun; requires frequent adjustment; doesn't fry food; bulky; difficult to use in the wind; cooking times are often longer.

9. Dutch oven with an external heat source

a. Charcoal briquettes: place under and on top of the dutch oven.

b. Wood stove or fire pit: arrange wood coals around the dutch oven.

Pros: can be used to boil or bake; heats evenly when surrounded by fuel.

Cons: requires a lot of fuel to surround; gets sooty.

Heating

Long-term heating solutions will depend on town ordinances regarding the storage of fuel. Make sure to check your town ordinances in advance.

Do not store flammable products in a living space. Store wood a safe distance from the house.

Make sure to install proper ventilation to prevent carbon monoxide poisoning.

Heaters and stoves are available for propane, kerosene, pellets, wood, and coal.

1. Wood stoves are popular because wood is easier to find when other fuels are no longer available.

Wood

A cord of wood measures 4 ft. wide, 4 ft. high, and 8 ft. long to equal 128 cubic feet.

1 cord weighs 2 tons.

1 cord provides the same heat as 1 ton of coal. The standard recommendation for one winter of heating is 2-4 cords of wood, or 4-8 tons.

2. Coal stoves are popular because they produce more heat and burn hotter than wood stoves. Be sure that the stove is designed to handle the extra heat. Coal takes up less space than wood.

Coal

The standard recommendation for one winter of heating is 2-4 tons of coal.

Coal deteriorates quickly when exposed to the elements and should be covered.