

PROPANE SAFETY

Characteristics:

- Propane is transported and stored as a liquid.
- Propane (sometimes called LPG or LP-gas) is a colorless and odorless gas.
- An odorant is added to propane to give it an awful smell, often described as being similar to rotten eggs.
- Propane vapors are heavier than air and may accumulate in low-lying areas such as basements and ditches or along floors. Propane is flammable when mixed with air (oxygen) and can be ignited by many different sources.

- Chemical formula: C₃H₈
- Specific gravity, liquid: 0.509
- Specific gravity, vapor: 1.52
- Weight per gallon: 4.24 pounds
- Ignition temperature: 920 - 1,120 degrees Fahrenheit
- Maximum flame temperature: 3,595 degrees Fahrenheit
- Heat value per cubic foot of vapor: 2,516 Btu
- Heat value per pound of liquid: 21,591 Btu
- Heat value per gallon of liquid: 91,547 Btu

Propane can potentially harm you in three different ways. When kept under high pressure or exposed to a heat source, propane can explode or cause a fire. At high concentrations, gaseous propane can cause you to asphyxiate, or suffocate due to oxygen deprivation. Finally, propane exposure can also affect the body's central nervous system. In this case, short-term exposure can cause dizziness, confusion, hallucinations, nausea, vomiting, unconsciousness or cardiac arrest. Repeated exposure to propane over time can lead to nosebleeds, weight loss, lethargy or disorders of the nervous system.

Attaching Propane to Your Stove:

Check to make certain that the device being connected to the tank or propane tree is turned off (lantern, stove, etc.) and be sure that the connectors, valves and tank body are in good working condition. If any parts of the canisters or tanks, or stove have rust, are missing (rubber seals and "O" rings, for example) or appear damaged or broken, do not attach propane canisters or tanks, or light the stove or lantern. Look too for sources of ignition which might catch fire when lit (cooking grease for example) or which might block an otherwise solid connection. Don't try to modify any of the connection equipment, or try to bend or force any hoses, valves, connectors or other components that link the propane canisters or tanks, to the stove body. These tightly-engineered parts are designed for a precise fit that prevents propane leakage and reduces the risk of a fire or explosion.

Every connection must be checked twice. Once by the scout and a second time by a scouter who will back the connection out and then in again to feel the thread "hold".

Report any problems to the Troop and adult quartermaster!

Check Tank and Connector Integrity:

If ever in serious doubt about a connection, conduct a "bubble test" to check for propane gas leaks. This can be done by applying soapy water to the joint between the propane bottle and the stove's regulator and hose. Slowly open the tank's valve, and watch the water to see if bubbles appear. Bubbles indicate gas leakage. Loosen and reconnect the bottle to the regulator, and retest. If bubbles appear again, you need to take your stove and / or propane tank in for repair.

One of the most important parts of the propane camping stove is the burner. The burner uses the gas flow from the canister to ignite the burner. The burner establishes a flame which is controlled by the

temperature knob. If the burner has any breaks or rust in its shape, it will likely not perform up to proper temperature standards. Most burners can reach temperatures up to 400 degrees F, while some are higher depending on the size of the stove.

Placement, Ignition and Use:

Propane burners can give off enormous amounts of heat, even more than household kitchen burners! Take note of local climate and fire safety conditions, and be aware of regulations that may prohibit the use of propane stoves during periods of high fire-risk. Place your stove away from any nearby brush or overhanging trees or bushes, and rest it on a non-flammable surface. Make sure your stove is firmly planted and can't be easily knocked over or disturbed. Keep dry brush or leaves, paper, and plastic utensils away from the cooking area.

Before lighting, be certain the gas on all connected devices (lantern, stove, etc.) are turned off, then turn the gas on at the tank.

Lighting the stove should always be done using the stove's igniter (our new stoves no longer have these) -- a safe method because the spark is isolated inside of the stove. If an igniter is not available, use a wooden match or long-stem butane lighter. Never use a paper match or cigarette lighter! Make sure that your face is at arm's length away from the stove during the ignition process to reduce the risks of burns and injury. If the stove fails to ignite, immediately turn off the burner knobs and wait one or more minutes for the released gas to disperse, then try again.

Keep watch over cooking food at all times. ***Never leave a lit stove unattended.***

Turn off the gas on all connected devices (lantern, stove, etc.) when no longer in use then turn the gas off at the tank (some gas will remain in propane trees and hoses -- this is normal).

Stove Safety and Carbon Monoxide:

Make sure that the stove is in a properly ventilated area outdoors. Never use a propane stove in a camper, tent or a garage. Because propane stoves emit carbon monoxide, or CO, when operating it is critical that you only use your stove outdoors and in a well-ventilated space. Carbon monoxide is odorless and colorless, and accumulated CO displaces oxygen in the bloodstream and can cause death. Never use your propane stove in a tent, trailer or vehicle.

Packing Up and Disposal:

When you're ready to break down and pack up your stove, turn off the main propane valve and the stove's burners, then turn the gas off at the tank. When the stove is cool, disconnect the propane tank or canister. There will be some odor of gas from the connections but if a strong gas odor persists or you hear a hissing noise, leave the area immediately until a scouter (adult) declares the area safe to reenter.

If the propane canisters or tanks is ready for disposal, transport it upright to a propane retailer or recycling center. Propane canisters or tanks must not be refilled unless certified as safe for refill.

IN AN EMERGENCY:

DO ...

- The scout or scouter closest to the situation should turn the gas off at the tank and leave the area, doing the former only insofar as he can do so safely, but otherwise leaving it to an adult to handle.
- Get everyone outside and away from the stove.
- Extinguish all open flames and sources of ignition (flashlights, for example).
- Stay outside of the area until the leak has been found and fixed.

DO NOT ...

- Turn on electric devices. A spark from one can ignite the gas.
- Light or try to re-light the stove.
- Try to save equipment from heat damage if it places you at risk of injury.
- Re-enter the area until the problem has been corrected and a scouter (adult) clears you to reenter.



**Example of a rusted tank (left) which should not be used,
and a fully serviceable tank (right) which should be**



Pressured propane tank fire drill



Propane tank fire



Pressured propane tank fire (Controlled)