

Suburban Safety Tips for Construction Sites and Trades

READ AND PROVIDE THIS IMPORTANT SAFETY INFORMATION TO ALL END USERS!

Para información de seguridad en Español, llame al 1-888-223-0029

WHAT IS PROPANE?

Propane (also called LPG-Liquefied Petroleum Gas or LP-Gas) is a liquid fuel stored under pressure. In most systems, propane is vaporized to a gas before it leaves the tank. Propane is highly flammable when mixed with air (oxygen) and can be ignited by many sources, including open flames, smoking materials, electrical sparks, and static electricity. Severe "freeze burn" or frostbite can result if propane liquid comes in contact with your skin.



IF YOU SMELL, HEAR OR SEE GAS

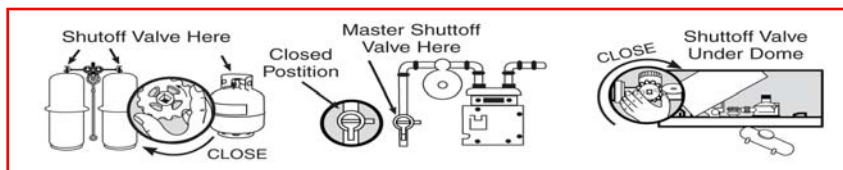
- 1. NO FLAMES OR SPARKS!** Immediately put out all smoking materials and other open flames. Do not operate lights, appliances, telephones, or cell phones. Flames or sparks from these sources can trigger an explosion or fire.
- 2. LEAVE THE AREA IMMEDIATELY!** Get everyone out of the building or area where you suspect gas is leaking.
- 3. SHUT OFF THE GAS.** Turn off the main gas supply valve on the propane tank if it is safe to do so. To close the valve, turn it to the right (clockwise).
- 4. REPORT THE LEAK.** From a location away from the gas leak, call 911 or your local fire department.
- 5. DO NOT RETURN TO THE BUILDING OR AREA** until responders determine that it is safe to do so.
- 6. GET THE SYSTEM CHECKED.** Before you attempt to use any propane equipment, have a qualified service technician inspect the entire system to ensure it is leak-free, and call Suburban to check all Suburban-owned equipment.



EQUIPMENT AWARENESS



KNOW HOW TO SHUT OFF THE GAS SUPPLY. Know where the gas supply shutoff valve to the premises valve is located. Tank and cylinder valves must be turned to the right (in a clockwise direction) to stop the flow of gas.



CHECK THE SYSTEM REGULARLY. Regulators must be protected so their operation will not be affected by the elements (freezing rain, sleet, snow, ice, mud or debris). Regulator vent should be pointed down. Do not create building openings or place sources of ignition within the area of propane equipment.

MANUFACTURER'S INSTRUCTIONS. Keep and comply with manufacturer's operating and maintenance instructions. Contact the equipment manufacturer for replacement instructions, if needed. Read and carefully follow the guidance set forth below for HEATING EQUIPMENT INSIDE BUILDINGS.



BUILDINGS OR STRUCTURES UNDER CONSTRUCTION OR UNDERGOING MAJOR RENOVATION NOT OCCUPIED BY THE PUBLIC

ASME TANKS are not to be used or stored indoors or on roofs.

DOT CYLINDERS INSIDE BUILDINGS AND ON ROOFS

- All cylinders must be DOT-specification cylinders with maximum individual capacity of 100 pounds propane.
- Cylinder valves shall be protected with a ventilated cap or collar.
- Cylinders and the valve-protecting devices used with them shall be oriented to minimize the possibility of impingement of the pressure relief valve discharge on the cylinder and adjacent cylinders.
- Transportation (movement) of cylinders having water capacities greater than 2.7 lbs within a building shall be restricted to movement within the building the cylinder is to be used, and the following:
 - Valve outlets on cylinders having water capacities greater than 2.7 lb shall be tightly plugged, capped, or sealed with a listed quick-closing coupling or a listed quick-connect coupling.
 - Only emergency stairways not normally used by the public shall be used, and precautions shall be taken to prevent the cylinder from falling down the stairs where freight or passenger elevators are used.
 - Emergency stairways shall be occupied only by those engaged in moving the cylinder.
 - Do not drop cylinders.
- Cylinders shall be located to minimize exposure to the following: abnormally high temperatures, physical damage and/or tampering.
- Cylinders connected for use shall stand on a firm and substantially level surface. If necessary, they shall be secured in an upright position.
- Where located on a floor, roof, or balcony, cylinders shall be secured to prevent falling over the edge.
- The use and transportation of cylinders in the unoccupied portions of buildings or structures under construction or undergoing major renovation that are partially occupied shall be approved by the authority having jurisdiction.
- Cylinders in temporary construction heat service are outfitted with excess flow valves either in the valve itself or directly attached to the cylinder valve outlet. Cylinders should be opened SLOWLY to prevent the excess flow valve from closing.
- Cylinders in temporary construction heat service may be vapor service or liquid service. Caution should be taken to make sure the cylinder is of the type applicable to the equipment being used.

PIPING AND REGULATORS INSIDE BUILDINGS AND ON ROOFS

LP-Gas vapor or liquid systems for temporary construction heat or permanent systems must be installed to National Fire Protection Association pamphlet 58, National Fire Protection Association pamphlet 54 or International Fuel Gas Code. Systems should be installed by a qualified LP-Gas technician. Contact Suburban or a qualified professional for installation details.

PIPING MATERIALS

Piping material specifications for pipe, tubing, pipe and tubing fittings, valves, hose, hose connections, and flexible connectors shall be in accordance with the following:

- Pipe, Tubing, Fittings and Valves must have a Maximum Operating Pressure of 350 psig or 400 WOG rating.
- Hose, hose connections, and flexible connectors used for conveying LP-Gas liquid or vapor used in buildings regardless of the pressure, shall comply with the following:
 - Hose shall be designed for a working pressure of 350 psig and shall be continuously marked with LP-GAS, PROPANE, 350 PSI WORKING PRESSURE, and with the manufacturer's name or trademark.
 - Hose assemblies shall be leak tested at the time of installation at not less than the operating pressure of the system in which they are installed.
- Further piping materials info can be located in NFPA 58 Liquefied Petroleum Gas code..

REGULATORS

Only properly sized regulators recommended by the manufacturer for use with LP-Gas shall be used.

PIPING AND REGULATOR INSTALLATION

LP-Gas piping shall not be used as a grounding electrode.

Hoses used to supply LP-Gas to utilization equipment or appliances shall be installed in accordance with the following:

- Hose shall be as short as practical, without kinking or straining the hose or causing it to be close enough to a burner to be damaged by heat.
- Hose shall not extend from one room to another or pass through any partitions, walls, ceilings, or floors except as provided below:

Where cylinders are manifolded together for connection to a heater or heaters on another floor, a heater shall not be installed on the same floor with manifolded cylinders; the total water capacity of the cylinders connected to any one manifold shall not be greater than 1000 lbs propane capacity; and manifolds of more than nominal 300 lbs propane capacity, if located in the same un-partitioned area, shall be separated from each other by at least 50 ft.

- Hose shall not be concealed from view or used in concealed locations.
- Hose shall be securely connected to the equipment.
- The use of rubber slip ends shall not be permitted.
- A shutoff valve shall be provided in the piping immediately upstream of the inlet connection of the hose.
- Where more than one such equipment shutoff is located near another, the valves shall be marked to indicate which equipment is connected to each valve.
- Hose shall be protected against physical damage.

HEATING EQUIPMENT INSIDE BUILDINGS

Heat-producing equipment shall be installed and used with clearances to combustibles (including construction materials and material containers) in accordance with the manufacturer's instructions.

Portable heaters, including salamanders, shall comply with the following:

- Portable heaters shall be equipped with an approved automatic device to shut off the flow of gas to the main burner and to the pilot (if applicable) in the event of flame extinguishment or combustion failure.
- Portable heaters having an input of more than 50,000 Btu/hr shall be equipped with either a pilot that must be lighted and remains lighted before the main burner can be turned on or an approved electronic ignition system is used.
- Portable heaters shall be self-supporting unless designed for cylinder mounting.
- Heaters used for temporary heating shall be located at least 6 ft from any cylinder.
 - Integral heater-cylinder units specifically designed for the attachment of the heater to the cylinder, or to a supporting standard attached to the cylinder, and designed and installed to prevent direct or radiant heat application to the cylinder, shall be exempt from the 6 ft spacing requirement.
 - If two or more heater-cylinder units of either the integral or non-integral type are located in an un-partitioned area on the same floor, the cylinder(s) of each such unit shall be separated from the cylinder(s) of any other such unit by at least 20 ft.
- Heat from blower-type and radiant-type units shall not be directed toward any cylinder within 20 ft.
- Where cylinders are manifolded together for connection to heaters in an un-partitioned area on the same floor, the total water capacity of cylinders manifolded together serving any one heater shall not be greater than 300 lbs propane capacity. If there is more than one such manifold, it shall be separated from any other by at least 20 ft.
- Where cylinders are manifolded together for connection to a heater or heaters on another floor, a heater shall not be installed on the same floor with manifolded cylinders; the total water capacity of the cylinders connected to any one manifold shall not be greater than 1000 lbs propane capacity; and manifolds of more than 300 lbs propane capacity, if located in the same un-partitioned area, shall be separated from each other by at least 50 ft.



BUILDINGS UNDERGOING MINOR RENOVATION WHEN FREQUENTED BY THE PUBLIC or OCCUPIED

ASME TANKS are not to be used or stored indoors or on roofs.

CYLINDERS INSIDE BUILDINGS

- Cylinders used and transported for repair or minor renovation in buildings frequented by the public during the hours the public normally occupies the building shall comply with the following:
 - The maximum water capacity of individual cylinders shall be 20 lbs propane capacity, and the number of cylinders in the building shall not exceed the number of workers using the LP-Gas.
 - Cylinders having a water capacity greater than 1 lb propane capacity shall not be left unattended.
- During the hours the building is not open to the public, cylinders used and transported within the building for repair or minor renovation and with a water capacity greater than 2.7 lbs shall not be left unattended.

HEATING EQUIPMENT INSIDE BUILDINGS

Follow the same guidance for HEATING EQUIPMENT INSIDE BUILDINGS set forth above under BUILDINGS OR STRUCTURES UNDER CONSTRUCTION OR UNDERGOING MAJOR RENOVATION – NOT OCCUPIED BY THE PUBLIC.



CHECKING FOR LEAKS:

After cylinder(s), equipment, piping and hose assembly, the entire system (including hose) shall be tested and proven free of leaks. Test for leaks at the cylinder service valve connection after every cylinder change out. Use non-corrosive leak detection fluid. Do not use matches. Follow NFPA 54 regulations for Pressure and Leak Check requirements on systems other than Construction Site or Trade uses if applicable.



DOT CYLINDER STORAGE:

LOCATION GENERAL

- Cylinders in storage shall be located to minimize exposure to excessive temperature rises, physical damage and/or tampering.
- Cylinders in storage shall be positioned so that the pressure relief valve is in direct communication with the vapor space of the cylinder.
- Cylinders shall not be stored on roofs.
- Cylinders shall not be stored indoors

LOCATION OUTSIDE OF BUILDINGS

Cylinders awaiting use shall be stored outside of buildings, as follows:

- At least 5 ft from any doorway or opening in a building frequented by the public where occupants have at least two means of egress as defined by NFPA 101, Life Safety Code.
- At least 10 ft from any doorway or opening in a building or sections of a building that has only one means of egress.
- At least 20 ft from any automotive service station fuel dispenser.
- Distances from cylinders in outdoor storage and exposures shall be in accordance the following table:

Distances from Cylinders in Outdoor Storage and Exposures			
Quantity of LP Gas Stored (lb.)	Horizontal distance to Exposure* (ft)		
	1* and 2*	3* and 4*	5*
<or = 720	0	0	5
721 to 2500	0	10	10
2501 to 6000	10	10	10
6001 to 10,000	20	20	20
> 10,000	25	25	25

Exposure Description*

- 1 – Nearest Important building or group of buildings
- 2 – Line of adjoining property that can be built upon
- 3- Busy thoroughfare or sidewalks on other than private property
- 4 – Line or adjoining property occupied by schools, churches, hospitals, athletic fields, or other points of public gathering
- 5 – Dispensing station

- Where LP-Gas and one or more other compressed gases are to be stored or used in the same area, the propane cylinders shall be marked “Flammable” and either “LP-GAS” or “Propane” or shall be marked in accordance with the requirements of DOT regulations, 49 CFR.

PROTECTION OF CYLINDERS

Cylinders at a location open to the public shall be protected by either of the following:

- An enclosure in accordance with at least a 6 ft high industrial-type fence, chain link fence, or equivalent protection.
 - There shall be at least two means of emergency egress from the enclosure except as follows:
 - The fenced or otherwise enclosed area is not over 100 sq ft.
 - Containers are not filled within the enclosure.
 - Clearance of at least a 3 ft path to the point of egress.
 - Fencing shall not be required where devices are provided that can be locked in place and prevent unauthorized operation of valves, equipment, and appurtenances.
- A lockable ventilated enclosure of metal exterior construction.

PROTECTION AGAINST VEHICLE IMPACT

Cylinders in storage must be protected from vehicle impact. Examples of such protection could be the following:

- Guard rails
- Steel bollards
- Raised sidewalks

Where the provisions above are impractical at construction sites or at buildings or structures undergoing major renovation or repairs, alternative storage of cylinders shall be acceptable to the authority having jurisdiction.

PROTECTION OF VALVES ON CYLINDERS IN STORAGE

Cylinder valves shall be protected as follows:

- Cylinders of 420 lbs propane capacity or less shall incorporate protection against physical damage to cylinder appurtenances and immediate connections to such appurtenances when not in use by either of the following means:
 - A ventilated cap
 - A ventilated collar
- Valve outlets on cylinders of 45 lbs propane capacity or less shall be equipped with a redundant pressure-tight seal or a listed quick-connect coupling. Where seals are used, they shall be in place whenever the cylinder is not connected for use.
- Screw-on-type caps or collars shall be in place on all cylinders stored, regardless of whether they are full, partially full, or empty, and cylinder outlet valves shall be closed.



FIRE PROTECTION

- DOT cylinder storage locations, where the aggregate quantity of propane stored is in excess of 720 lbs, shall be provided with at least one approved portable fire extinguisher having a minimum capacity of 18 lbs dry chemical with B:C rating.
- The required fire extinguisher shall be located no more than 50 ft from the storage location.
- LP-Gas fires shall not be extinguished until the source of the burning gas has been shut off.



TRANSPORTATION OF ASME TANK(S)

Only Suburban personnel may transport ASME tanks. Contact your local Customer Service Center for coordination of ASME tank moves.



HIGHWAY TRANSPORTATION OF DOT CYLINDERS:

- Persons who transport propane shall be trained in proper handling procedures. Training shall be documented and refresher training provided every 3 years unless otherwise required by the authority having jurisdiction.
- Individual cylinders must have propane capacity less than 420 lbs.
- Cylinder valves shall comply with the following:
 - Valves of cylinders shall be protected with either a ventilated cap or a ventilated collar. Screw-on-type protecting caps or collars shall be secured in place.
 - Valve outlets on cylinders of 45 lbs propane capacity or less shall be equipped with a redundant pressure-tight seal or a listed quick-connect coupling. Where seals are used, they shall be in place whenever the cylinder is not connected for use.
- The cargo space of the vehicle shall be isolated from the driver's compartment, the engine, and its exhaust system. Open-bodied vehicles shall be considered to be in compliance with this provision.
 - Closed-bodied vehicles having separate cargo, driver, and engine compartments shall also be considered to be in compliance with this provision.
 - Closed-bodied vehicles such as passenger cars, vans, and station wagons shall not be used for transporting more than 90 lbs aggregate propane capacity, and not more than 45 lbs propane capacity per cylinder unless the driver and engine compartments are separated from the cargo space by a vapor-tight partition that contains no means of access to the cargo space.
- Cylinders and valves shall be determined to be leak-free before being loaded into vehicles.
- Cylinders shall be loaded into vehicles with flat floors or equipped with racks for holding cylinders.
- Cylinders shall be fastened in position to minimize the possibility of movement, tipping, and physical damage.
- Cylinders being transported by vehicles shall be positioned in accordance with the table below:

Orientation of Cylinders on Vehicles		
Capacity of cylinder (lbs)	Open Vehicles	Enclosed Spaces of Vehicles
less than or equal to 45	Any position	N/A
Greater than 45	Relief valve in communication with the Vapor Space of the cylinder	N/A
Less than or equal to 4.2	N/A	Any position
Greater than 4.2	N/A	Relief valve in communication with the Vapor Space of the cylinder

- Vehicles transporting cylinders where the total weight is more than 1000 lbs, including the weight of the LP-Gas and the cylinders, shall be placarded as required by DOT regulations and/or state law.
- When being transported, cylinders shall be marked and labeled in accordance with DOT regulations 49 CFR.

CAN YOU SMELL IT?



Propane smells like rotten eggs, a skunk's spray, or a dead animal. Some people may have difficulty smelling propane due to their age (older people have a less sensitive sense of smell); a medical condition; or the effects of medication, alcohol, tobacco, or drugs. Consider purchasing a propane gas detector as an additional measure of security.



ODOR FADE is an unintended reduction in the concentration of the odor of propane, making it more difficult to smell. Although rare, several situations can cause odor fade such as the presence of air, water or rust in a propane container, the passage of leaking propane through soil and exposure to building materials, masonry or fabrics. **Since there is a possibility of odor fade or problems with your sense of smell, you should respond immediately to even a faint odor of gas.**



PROPANE GAS DETECTORS

Propane gas detectors sound an alarm if they sense propane in the air. They can provide an additional measure of security in structures with little-used areas or for individuals who have difficulty smelling propane.



GUIDELINES regarding propane gas detectors:

- Buy only units that are listed by Underwriters Laboratories (UL).
- Follow the manufacturer's instructions regarding installation and maintenance.
- Never ignore the smell of propane, even if no detector is sounding an alarm.



CARBON MONOXIDE AND YOUR SAFETY

WHAT IS CARBON MONOXIDE (CO)?

You can't taste or smell CO, but it is a very dangerous gas, produced when any fuel burns. High levels of CO can come from appliances that are not operating correctly, or from a venting system or chimney that becomes blocked.

CO CAN BE DEADLY! High levels of CO can make you dizzy or sick (see below). In extreme cases, CO can cause brain damage or death.

Symptoms of CO poisoning include:

- Headache
- Shortness of breath
- Fatigue
- Dizziness
- Nausea

IF YOU SUSPECT CO IS PRESENT, ACT IMMEDIATELY!



1. If you or any individual shows physical symptoms of CO poisoning, get everyone out of the building and call 911 or your local fire department.
2. If it is safe to do so, open windows to allow entry of fresh air, and turn off any appliances you suspect may be releasing CO.
3. If no one has symptoms, but you suspect that CO is present, call Suburban or a qualified service technician.



TO HELP REDUCE THE RISK OF CO POISONING:

- Have a qualified service technician check the propane equipment annually.
- Consider installing UL-listed CO detectors.
- Never use a gas oven or range-top burners to provide space heating.
- Never use portable heaters indoors unless they are designed and approved for indoor use.
- Never use a barbecue grill (propane or charcoal) indoors.

SIGNS OF IMPROPER APPLIANCE OPERATION THAT CAN GENERATE HIGH CO LEVELS:

- Sooting, especially on appliances and vents.
- Unfamiliar or burning odor.
- Increased moisture inside of windows.



LIGHTING PILOT LIGHTS

IF A PILOT LIGHT REPEATEDLY GOES OUT or is very difficult to light, there may be a safety problem. **DO NOT** try to fix the problem yourself. It is strongly recommended that only a **QUALIFIED SERVICE TECHNICIAN** light any pilot light that has gone out.

YOU ARE TAKING THE RISK of starting a fire or an explosion if you light a pilot light yourself. Carefully follow all of the manufacturer's instructions and warnings concerning the appliance before attempting to light the pilot.



APPLIANCE MAINTENANCE



LEAVE IT TO THE EXPERTS. Only a qualified service technician has the training to install, inspect, service, maintain, and repair propane equipment.

DO NOT TRY TO MODIFY OR REPAIR valves, regulators, connectors, controls, or other appliance and cylinder/tank parts. Doing so creates the risk of a gas leak that can result in property damage, serious injury, or death.



FLAMMABLE VAPORS ARE A SAFETY HAZARD. The pilot light on a propane appliance can ignite vapors from gasoline, paint thinners, and other flammable liquids. Be sure to store flammable liquids outdoors or in an area of the building containing no propane appliances.



DON'T RISK IT! If you cannot operate any part of the propane system, or if you think an appliance or other device is not working right, call a qualified service technician for assistance.



BE PREPARED FOR WEATHER-RELATED AND OTHER EMERGENCIES

FLOODING – If a flood is predicted for your area or gas-fired appliance(s) or equipment has been submerged due to flooding:

- **Turn off the gas** valve at the container or cylinder.
- **DO NOT** turn the gas back on until a qualified service technician has checked the system.

HEAVY SNOW OR ICE – Heavy accumulations of snow, ice, or icicles falling from roof eaves on regulators, piping, tubing and valves may cause damage that could result in a gas leak. Regulator vents must remain clear of snow and ice to operate properly. Check the regulator vents on the propane system to be sure they are free of condensation, which if frozen, could cause a malfunction. If a regulator vent is clogged with ice or snow, contact Suburban immediately. Appliance vents, chimneys and flues must be kept clear of snow and ice so appliances may vent properly, especially on roofs of mobile homes. Customer shall arrange for protection of regulators from the elements and, where applicable, for protection of piping, regulators, meters, etc. from the forces of accumulated snow/ice/icicles with a protective structure (contact your local building or fire official for guidance). When removing snow:

- Use care around tanks, piping, tubing, valves, regulators and other equipment to prevent damage
- Use a broom instead of a shovel.
- Do not shovel snow from roofs onto propane equipment. The weight of the snow/ice/icicle could damage propane equipment causing a leak.

KNOW WHERE UNDERGROUND GAS LINES AND TANKS ARE LOCATED on your construction site to avoid damaging them when digging or working.



FURTHER PROPANE SAFETY INFORMATION

We urge you to visit www.suburbanpropane.com for Consumer Safety Information prepared by the Propane Education & Research Council (PERC). Pamphlets called "Important Propane Safety information for You and Your Family," "Important Propane Safety Information for Users of Small Cylinders" (including cylinder transportation, storage and inspection procedures), an expansive "Propane Safety" booklet, weather/natural disaster information, and Suburban's Material Safety Data Sheet (MSDS) may be read and downloaded online. These documents are also available free of charge by calling Suburban at 1-888-223-0029 or and PERC pamphlets containing a Scratch and Sniff Test of propane odor can be purchased at 1-866-905-1075 or www.propanecatalog.com.