



# Propane Safety



- What to Do in Case of Emergency
- How to Use Propane Safely
- Appliance Safety and Maintenance Tips

**PROPANE**  
EXCEPTIONAL ENERGY®

# READ THIS FIRST

## IF YOU SMELL 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 a 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 your 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 neighbor's home or other nearby building away from the gas leak, call your propane retailer right away. If you can't reach your propane retailer, call 911 or your local fire department.



- 5. DO NOT RETURN TO THE BUILDING OR AREA** until your propane retailer determines that it is safe to do so.



- 6. GET YOUR SYSTEM CHECKED.** Before you attempt to use any of your propane appliances, your propane retailer or a qualified service technician must check your entire system to ensure that it is leak-free.

## WHAT DOES PROPANE SMELL LIKE?

Propane has a strong, unpleasant smell like rotten eggs, a skunk's spray, or a dead animal. Propane manufacturers add the smell deliberately to help alert customers to propane leaks, which can create a safety hazard.

## CARBON MONOXIDE AND YOUR SAFETY

**WHAT IS CARBON MONOXIDE (CO)?** You cannot taste or smell CO, but it is a very dangerous gas produced when any fuel burns.

**CO CAN BE DEADLY!** In extreme cases, high levels of or extended exposure to CO can result in 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 a family member 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 the CO.
3. If no one has physical symptoms of CO poisoning, but you suspect that CO is present, call your propane retailer or a qualified service technician to check CO levels and your propane equipment.



# TABLE OF CONTENTS

---

Section 1	<b>Propane Safety Basics</b>	
	Make Time for Safety	5
	Propane Facts	5
	If You Smell Gas	6
	Recognizing the Smell of Propane	7
	Can You Smell It?	7
	Odor Fade	8
	Propane Gas Detectors	8
	Carbon Monoxide (CO) and Your Safety	9
Section 2	<b>System Safety</b>	
	Running Out of Gas	12
	Lighting Pilot Lights	12
	Appliance Maintenance	14
	Appliance Connectors	15
	If You Move or Get a New Appliance	16
	Tampering with Appliances or Propane Equipment	16



---

Section 3	<b>Other Important Safety Situations</b>	
	Flammable Vapor Ignition	18
	Closing Up a House	18
	Weather-Related Emergencies	19
	Using Space Heaters Safely	20
	Small-Cylinder Safety	20
Section 4	<b>Your Propane System</b>	
	How Does Propane Get to Your House?	25
Appendix	Maintenance Record	26
	Safety Checklist	28
	Important Contacts	29
	Material Safety Data Sheet (MSDS)	
	BP MSDS - Propane	31
	BP MSDS - Propane with odorant	37

# PROPANE SAFETY BASICS

Make Time for Safety  
Propane Facts  
If You Smell Gas  
Recognizing the Smell of Propane  
Can You Smell It?  
Odor Fade  
Propane Gas Detectors  
Carbon Monoxide (CO) and Your Safety

**\* USER TIP:**

After reading through this manual, please take a few minutes more to share it with your family. It's important that everyone in your family understands how to use propane safely.

## MAKE TIME FOR SAFETY

Propane is a safe, economical, clean-burning, and versatile fuel when properly used. This manual is designed to give you and your family the information you need to safely and comfortably enjoy all the benefits that propane can deliver. **Only you can keep your family safe**, so be sure that all family members review the important safety information in this manual.

Regardless of the type of energy you use, safety is extremely important. With propane—as with electricity, natural gas, fuel oil, gasoline, or any other energy form—you need to understand how your delivery system and appliances work, and what to do in case of a leak or other safety-related emergency.



**PLEASE READ AND FOLLOW THE SAFETY RULES IN THIS BROCHURE. SHARE THIS INFORMATION WITH YOUR FAMILY TO HELP KEEP EVERYONE SAFE AND TO REDUCE THE RISK OF SERIOUS AND POTENTIALLY FATAL INJURY, FIRE, OR EXPLOSION.**

## PROPANE FACTS

Propane (also called LPG—liquefied petroleum gas—or LP gas) is a widely used fuel. It is transported and stored as a liquid under pressure and is usually used as a gas. Severe freeze burn or frostbite can result if propane liquid comes in contact with your skin. The liquid propane is turned into a gas inside a tank or a cylinder. In its natural form, propane is colorless and odorless. To make propane easier to detect in the event of a leak or spill, manufacturers deliberately add a chemical compound to give it a distinctive smell.

Propane is flammable when mixed with air (oxygen) and can be ignited by many sources, including open flames, smoking materials, electrical sparks, and static electricity.

Propane vapors are heavier than air. For this reason, they may accumulate in low-lying areas such as basements, crawl spaces, and ditches, or along floors. However, air currents can sometimes carry propane vapors elsewhere within a building.

## IF YOU SMELL 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 a 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 your 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 neighbor's home or other nearby building away from the gas leak, call your propane retailer right away. If you can't reach your propane retailer, call 911 or your local fire department.



- 5. DO NOT RETURN TO THE BUILDING OR AREA** until your propane retailer determines that it is safe to do so.



- 6. GET YOUR SYSTEM CHECKED.** Before you attempt to use any of your propane appliances, your propane retailer or a qualified service technician must check your entire system to ensure that it is leak-free.

## RECOGNIZING THE SMELL OF PROPANE

Propane has a strong, unpleasant smell like rotten eggs, a skunk's spray, or a dead animal. Propane manufacturers add the smell deliberately to help alert customers to propane leaks, which can create a safety hazard.

## CAN YOU SMELL IT?

It may be hard for some people to smell propane for the following reasons:

- They have a cold, allergies, sinus congestion, or another medical condition.
- Their sense of smell is reduced due to use of tobacco, alcohol, or drugs.
- Tobacco smoke, cooking odors, and other strong odors can mask the smell of propane.
- As people age, their sense of smell can become less sensitive.
- If the smell of propane is present in the air over a period of time, "odor fatigue" can occur. The nose "gets tired," and a person no longer smells the propane odor.
- The propane smell may not be strong enough to wake up someone who is sleeping.
- The propane smell may be in a location (basement or attic) where it is not detected by people in other areas of the building.
- A phenomenon called "odor fade" can occur—an unintended reduction in the concentration of the odor of propane (as explained on page 8).

## ODOR FADE

**ODOR FADE ALSO CAN DIMINISH PROPANE'S SMELL.** 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:

- Air, water, or rust in a propane tank or cylinder can reduce propane odor concentration.
- If the propane is leaking underground, its passage through soil may reduce the smell of propane.
- The propane odor may stick to the inside surfaces of gas piping and distribution systems and possibly other materials.



**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.**

**IF YOU ARE CONCERNED** that you or others in your home may have difficulty smelling propane, consider buying one or more propane gas detectors.

## PROPANE GAS DETECTORS



### **CONSIDER INSTALLING GAS DETECTORS.**

- Propane gas detectors are designed to sound an alarm if they sense the presence of propane. Their operation does not depend on the concentration of odorant in the air, just the propane concentration at the detector.
- We recommend that you consider installing one or more propane gas detectors. This is important if you or others in your home have difficulty smelling propane, or if appliances are in little-used areas in your home where the smell of propane might not be detected. Detectors can provide an additional measure of security.

**DETECTOR QUALITY IS IMPORTANT.** Be sure the units you buy are listed by Underwriters Laboratories (UL). To be sure propane gas detectors operate properly, install and maintain them as the manufacturer recommends.

**TRUST YOUR NOSE.** Never ignore the smell of propane, even if no detector is sounding an alarm to signal the presence of propane. However, if a detector is sounding an alarm, treat it as an emergency and act immediately, even if you do not smell the propane.

**CHECK YOUR PROPANE SYSTEM.** Even if you install gas detectors, have a qualified service technician inspect your propane system and propane appliances periodically.



## CARBON MONOXIDE (CO) AND YOUR SAFETY

**WHAT IS CARBON MONOXIDE?** Carbon monoxide (CO) is a colorless, odorless, tasteless, and toxic gas. Smoking a cigarette; idling a gasoline engine; and burning fuel oil, wood, kerosene, natural gas, and propane all produce CO. High levels of CO can be produced when fuels are burned incompletely.

### WHERE DO HIGH LEVELS OF CO COME FROM?

High levels of CO can be generated by appliances that are defective or improperly installed or maintained. CO can also enter a home if an appliance venting system or chimney becomes blocked (for example, by a bird's nest).

**CO CAN BE DEADLY!** High levels of CO can make you dizzy, give you headaches, or cause flu-like symptoms (see the list below). In extreme cases, high levels of or extended exposure to CO can result in brain damage or death. Young children; the elderly; people with heart disease; and those under the influence of alcohol, drugs, or medication are particularly susceptible to CO poisoning.

### Symptoms of CO poisoning include:

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

### CO DETECTORS CAN IMPROVE SAFETY.

CO detectors are designed to sound an alarm when they sense excessive levels of CO in the air. For an extra measure of safety, we recommend that you consider installing a CO detector listed by UL on each level of your home. Be sure to follow the manufacturer's instructions regarding installation, location, and maintenance.

### IF YOU SUSPECT CO IS PRESENT, ACT IMMEDIATELY!



1. If you or a family member 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 the CO.
3. If no one has physical symptoms of CO poisoning, but you suspect that CO is present, call your propane retailer or a qualified service technician to check CO levels and your propane equipment.



### **TO HELP REDUCE THE RISK OF CO POISONING:**

- Have a qualified service technician check your propane appliances and venting systems annually, preferably before the heating season begins.
- Consider installing a UL-listed CO detector on every level of your home.
- 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 for cooking or heating.
- Regularly check your appliance exhaust vents for blockage.



### **SOME 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



# SYSTEM SAFETY

# 2

Running Out of Gas  
Lighting Pilot Lights  
Appliance Maintenance  
Appliance Connectors  
If You Move or Get a New Appliance  
Tampering with Appliances or Propane Equipment

\* **USER TIP:**

Do not try to modify or repair any part of your propane system. Doing so creates the risk of a gas leak that can result in serious and potentially fatal injury, fire, or explosion.

## RUNNING OUT OF GAS



**DON'T RUN OUT OF GAS. SERIOUS SAFETY HAZARDS, INCLUDING FIRE OR EXPLOSION, CAN RESULT.**

- If an appliance valve or a gas line is left open when the propane supply runs out, a leak could occur when the system is recharged with propane.
- Air and moisture could get into an empty or depleted storage tank, which can cause rust build-up inside the tank. Rust can decrease the concentration of the odor of propane, making it harder to smell.
- If your propane tank runs out of gas, any pilot lights on your appliances will go out. This can be extremely dangerous if not handled properly.
- **A LEAK CHECK IS REQUIRED.** In many states, a propane retailer or a qualified service technician must perform a leak check of your propane system before turning on the gas.
- **SET UP REGULAR DELIVERY.** Establish a regular delivery schedule with your propane retailer. Also, periodically check the fuel gauge on your propane tank. If the fuel level drops below 20%, call your propane retailer.



## LIGHTING PILOT LIGHTS



**IT IS STRONGLY RECOMMENDED THAT A QUALIFIED SERVICE TECHNICIAN LIGHT ANY PILOT LIGHT THAT HAS GONE OUT.**



**WHAT IS A PILOT LIGHT?** Many propane appliances may have a pilot light—a small, constantly burning flame inside the appliance. (Appliances without a pilot light often have electronic ignition instead.) If your appliance has a pilot light, it is an important safety feature. The pilot light ignites the main burner when needed.

**WHEN A PILOT LIGHT GOES OUT.** A pilot light that repeatedly goes out—or is very difficult to light—may be signaling that there is a problem with the appliance or with your propane system. If this occurs, do not try to fix the problem yourself. Contact a qualified service technician to evaluate the appliance. Accidents and serious injuries can occur when customers attempt to fix a pilot light problem on their own.



**IF YOU LIGHT A PILOT LIGHT YOURSELF, YOU ARE TAKING THE RISK OF STARTING A FIRE OR AN EXPLOSION. MANY SERIOUS INJURIES OCCUR WHEN PEOPLE ATTEMPT TO LIGHT PILOT LIGHTS. PROCEED WITH GREAT CAUTION AND FOLLOW THESE RULES:**

- Carefully follow all of the manufacturer's instructions and warnings concerning the appliance.
- If the appliance is in a basement or closed room, thoroughly ventilate the area before lighting the pilot.
- **DO NOT** smoke or have any source of ignition (such as flames or spark-producing materials) in the area before lighting the pilot.
- Be especially alert for the smell of propane. Sniff at floor level before lighting a pilot.
- **IF YOU SMELL GAS, DO NOT LIGHT THE PILOT LIGHT.**
- **DO NOT** allow any extra or unnecessary people (especially children) to remain in the room or area of the building where you are lighting a pilot.
- **DO NOT** try to light pilot lights in any area where other odors may make it difficult for you to detect the smell of a propane leak.
- **DO NOT** light the pilot if a musty or damp smell persists. These conditions can mask the smell of propane.
- **DO NOT** apply force or use tools on the pilot light or its control. This could cause damage that leads to gas leakage. Use only your hands to operate knobs, switches, or buttons.
- **DO NOT** attempt to let air out of gas lines by opening a valve or fitting inside a building or enclosed space. You may release gas and not be able to smell it.
- **DO NOT** apply oil to a sticky knob or button on a gas control valve. Oil can cause the control valve mechanism to stick and malfunction.

## APPLIANCE MAINTENANCE



- **MAINTENANCE IS IMPORTANT.** All appliances using propane must be properly maintained in order to operate safely, properly, and efficiently.
- **LEAVE IT TO THE EXPERTS.** Only a qualified service technician has the proper training to install, service, maintain, and repair your appliances. Make sure you have a qualified service technician install and service your appliances.



- **ANNUAL INSPECTION IS IMPORTANT.** Contact a qualified service technician to perform an appliance inspection.
- **BE SURE YOUR APPLIANCES CAN “BREATHE” PROPERLY.** Regularly check the vents of your appliances to be sure that flue gases can flow easily to the outdoors. Insects, birds, and small animals sometimes build nests in vent pipes. Other obstructions such as snow or ice may also occur. If you see evidence of this, call a qualified service technician. Also, clear the area around your appliance to be sure plenty of air can reach the burner for proper combustion.



- **NEVER** store combustible materials near appliances.
- **WATCH FOR YELLOW FLAMES OR SOOT BUILD-UP.** When appliances are operating properly, propane burns with a blue flame. If you see yellow flames, or notice significant amounts of soot on any equipment, the gas may not be burning completely. This can create carbon monoxide, a colorless, odorless, and poisonous gas. Contact a qualified service technician if any of the above conditions occur.

## APPLIANCE CONNECTORS

- **PROPERLY INSTALL AND MAINTAIN CONNECTORS.** The final section of the system that brings gas to your appliances is the appliance connector (see illustration on page 24). It is important that all appliance connectors are properly inspected, installed, and maintained by a qualified service technician.
- **HAVE CONNECTORS CHECKED WHEN MOVING OR REPLACING APPLIANCES.** Connectors can wear out from too much moving, bending, or corrosion. Connectors should be checked by a qualified service technician whenever the appliance is replaced or moved from its location.
- **USE ONLY APPROVED APPLIANCE CONNECTORS.** Make sure that all connectors and gas piping/tubing that bring propane to your appliances are installed by a qualified service technician and approved by the American National Standards Institute (ANSI).
- **HAVE OLDER APPLIANCE CONNECTORS INSPECTED.** Over time, some types of appliance connectors can crack or break, resulting in a serious gas leak and the possibility of fire or explosion. The Consumer Product Safety Commission (CPSC) has warned that certain types of older connectors are extremely dangerous. If you have an appliance that is more than 20 years old, have a qualified service technician inspect the connectors to be sure they are safe and meet current safety-code requirements.
- **DO NOT MOVE AN APPLIANCE YOURSELF** to check the connector; this might damage the connector and create a leak.

## IF YOU MOVE OR GET A NEW APPLIANCE

- **TREAT CONNECTORS WITH CARE.** When an appliance is moved, be careful not to damage the appliance connector (the flexible tubing that brings gas to the unit). Older connectors can crack if flexed or twisted, which can lead to a gas leak.
- **IS THE APPLIANCE DESIGNED TO USE PROPANE?** Be sure that any new or used appliance being installed is designed for use with propane. Natural gas appliances **SHOULD NOT** be used with propane unless a qualified service technician has made required adjustments to the appliance.



- **HAVE THE APPLIANCE CHECKED OUT BEFORE YOU USE IT.** Be sure that the appliance is properly installed and that all controls and valves operate correctly. Contact a qualified service technician for assistance.
- **CAP OR PLUG UNATTACHED GAS LINES.** If you move a gas appliance and disconnect it from a gas line, be sure to contact your propane retailer or a qualified service technician to close, cap, or plug the open gas line. Any connectors or gas line not connected to an appliance can leak gas, or can be damaged if water accumulates inside it. The valve on any unattached gas line must be closed, and the open end must be sealed by installing a threaded cap or plug.



## TAMPERING WITH APPLIANCES OR PROPANE EQUIPMENT

- **DO NOT UNDER ANY CIRCUMSTANCES** 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.
- **CALL AN EXPERT.** If you are unable to operate any part of your propane system, or if you think an appliance or other device is not operating properly, call your propane retailer or a qualified service technician. They can inspect, adjust, repair, or replace any part of your propane system.
- **YOUR PROPANE SYSTEM IS DESIGNED FOR SAFETY.** Propane cylinders, tanks, and appliances incorporate special components (such as valves, connectors, controls, burners, and pilot lights) to keep them safe for use. Damaging these components can cause gas leaks.

# OTHER IMPORTANT SAFETY SITUATIONS

# 3

Flammable Vapor Ignition  
Closing Up a House  
Weather-Related Emergencies  
Using Space Heaters Safely  
Small-Cylinder Safety

\* **USER TIP:**

Never store propane cylinders indoors or in an enclosed area. Any gas leaking from a cylinder could build up and be ignited by a flame or spark, causing an explosion or a fire.

## FLAMMABLE VAPOR IGNITION



### FLAMMABLE VAPORS ARE A SERIOUS SAFETY HAZARD!

- Vapors from flammable products—such as gasoline, kerosene, paint thinner, and solvents—can be ignited accidentally by the pilot light of a propane appliance.
- Flammable vapors are often heavier than air and may travel along the ground and collect in low or confined areas (such as a basement or pit). Sometimes the vapors may follow air currents in the building to higher levels. Any source of ignition in these areas (such as a pilot light, spark, heater element, or electric motor) could cause an explosion or a fire.



### TO HELP REDUCE THE RISK OF FLAMMABLE VAPOR IGNITION:



- Store flammable liquids in well-sealed containers outside.
- Do not use gasoline, cleaning fluids, oil-soaked rags, or other flammable liquids inside a building where propane appliances are located.

### PROPANE VAPORS CAN BE DANGEROUS.

Propane vapor is also combustible and can ignite explosively. Keep propane storage containers closed. Never store propane cylinders in an enclosed area, or near a heat or ignition source.

## CLOSING UP A HOUSE

### KEEP YOUR HOME SAFE WHEN YOU'RE AWAY.

If you're leaving your home for an extended period, consider closing all propane supply valves. This includes the main gas supply valve on the propane tank as well as gas supply valves located near individual appliances.



**WHEN YOU RETURN** to your home after an extended absence, contact your propane retailer or a qualified service technician to conduct a leak check before the propane is turned on and to re-light the pilot lights.



## WEATHER-RELATED EMERGENCIES



**PROTECT YOUR PROPANE SYSTEM IF THE WEATHER TURNS BAD.** Before, during, or after severe weather, you may need to take specific action to ensure the continued safe operation of your propane system.

### **WATER CAN DAMAGE YOUR PROPANE SYSTEM.**

If flooding is predicted for your area, turn off the gas valve at the cylinder or tank **BEFORE** the water rises. Do not turn the gas back on until the gas system and all appliances have been checked by a qualified service technician. **AFTER A FLOOD**, contact a qualified service technician to check your propane system and appliances. A qualified service technician will likely have to do some or all of the following:

- Replace the regulator and/or pressure relief valves if there are signs of water, dirt, debris, or corrosion.
- Replace the automatic controls and appliance regulators on any gas appliances that have been under water.
- Inspect and (if necessary) replace manual shut-off valves in gas piping, and perform tank testing of the system.
- Clean appliance main and pilot burners and replace pilot orifices.

**CLEAR THE SNOW.** You should clear heavy snow and ice from regulators, regulator vents, piping, tubing, and valves. Failure to do so can cause damage that could result in a gas leak. Appliance vents, chimneys, and flues also must be kept clear of snow and ice so appliances can vent properly. This is especially critical on the roofs of mobile homes. Clear snow carefully. Use a broom rather than a shovel to avoid damaging any components. Also, clear the walkway and tank area so that propane-company personnel have ready access to your tank.



**WHAT IF SOMETHING DOESN'T LOOK RIGHT AFTER A STORM?** If your tank has shifted position; gas lines are bent, broken, or damaged; or you see something else unusual about your system or appliance, turn off the main gas supply valve on your propane tank, if it is safe to do so. Then contact your propane retailer or a qualified service technician.

## USING SPACE HEATERS SAFELY

- **USE THE RIGHT KIND OF HEATER.** Some propane space heaters are designed only for use outdoors. Others are designed only for use indoors. Check your owner's manual or contact a qualified service technician to be sure you are using the right kind of heater.
- **DO NOT USE AN OUTDOOR HEATER INDOORS.** High levels of CO can be generated from heaters that are not designed for indoor use. High levels of CO can make you dizzy, give you headaches, or cause flu-like symptoms. In extreme cases, extended exposure to CO can result in brain damage or death.
- **READ YOUR SPACE HEATER MANUAL.** The appliance manufacturer's manual that came with your space heater tells how to set up and operate it safely. Read the entire manual and carefully follow all directions.



## SMALL-CYLINDER SAFETY

You may occasionally use small propane cylinders to operate barbecue grills and other outdoor appliances. If so, be sure to follow these basic safety tips:

### IF YOU SMELL GAS



1. Immediately put out all smoking materials and other open flames.



2. If you are able to, safely turn off the cylinder valve. To close the valve, turn it to the right (clockwise).



3. Immediately leave the area and call 911 or your local fire department.



4. Before you restart the appliance, have a qualified service technician inspect your cylinder and appliance.



### STORAGE OF SMALL CYLINDERS

- **NEVER** store or place a propane cylinder indoors or in an enclosed area such as a basement, garage, shed, or tent.
- **NEVER** store or place a propane cylinder in an area of excessive heat (120 degrees or higher) or near a stove, fireplace, or other heat source. The heat builds up pressure inside the cylinder, which may cause the pressure relief valve to release propane. Flash fires or explosions can result from exposing cylinders to heat.
- **NEVER** store or place a spare cylinder under or near a barbecue grill.
- **DO NOT** smoke or have any ignition sources such as flames or spark-producing electrical tools in the area while handling or transporting cylinders.



### TRANSPORTATION OF SMALL CYLINDERS

- **ALWAYS** transport and store a cylinder in a secure and upright position so it will not fall, shift, or roll.
- **ALWAYS** close the cylinder valve and, if required, seal with a plug, even if the cylinder is empty. Ask your propane retailer if a plug is required.
- **NEVER** keep a filled cylinder inside a hot vehicle or transport it inside a closed trunk.
- **ALWAYS** place the cylinder in a well-ventilated area of the vehicle.
- **ALWAYS** proceed directly to your destination and immediately remove the cylinder from your vehicle.
- The law places limits on the number of cylinders and the amount of propane that can be transported in closed-bodied vehicles such as passenger cars and vans. Ask your propane retailer for more information on state and local codes that apply to you.

## TAMPERING WITH/REPAIR OF CYLINDERS OR OUTDOOR APPLIANCES



### DO NOT UNDER ANY CIRCUMSTANCES TRY TO MODIFY OR REPAIR VALVES, REGULATORS, OR OTHER CYLINDER OR APPLIANCE PARTS.

Propane cylinders incorporate special components such as valves, connectors, and other parts to keep them safe for use with grills and other propane appliances. Damage to any component can cause a gas leak.



**DON'T RISK IT!** Call your propane retailer or a qualified service technician for assistance.

## OVERFILL PREVENTION DEVICE (OPD)



### MAKE SURE YOUR CYLINDER IS EQUIPPED WITH AN OVERFILL PREVENTION DEVICE (OPD).

An OPD is a safety feature that helps prevent small propane cylinders from being overfilled. An overfilled cylinder doesn't have enough space left if the liquid expands when exposed to warmer temperatures. This can cause an increase in cylinder pressure and create potentially hazardous conditions.

Most cylinders with OPDs have special triangular handwheels with the letters "OPD" on them. In many states, cylinders without OPDs cannot be refilled. If you are uncertain as to whether your cylinder has an OPD valve on it, ask your propane retailer.

## OLD OR DAMAGED CYLINDERS

**NEVER** use a damaged cylinder or a cylinder that has been in a fire. All cylinders must be inspected before they are refilled. The law requires periodic inspection of cylinders, and it is against the law to refill out-of-date cylinders. The last inspection date is stamped on the cylinder.



## DISPOSAL OF CYLINDERS

**NEVER** dispose of your propane cylinder by throwing it in the trash. Check to see if there are municipal programs for collection in your area, or contact your propane retailer for guidance on disposal of the cylinder.

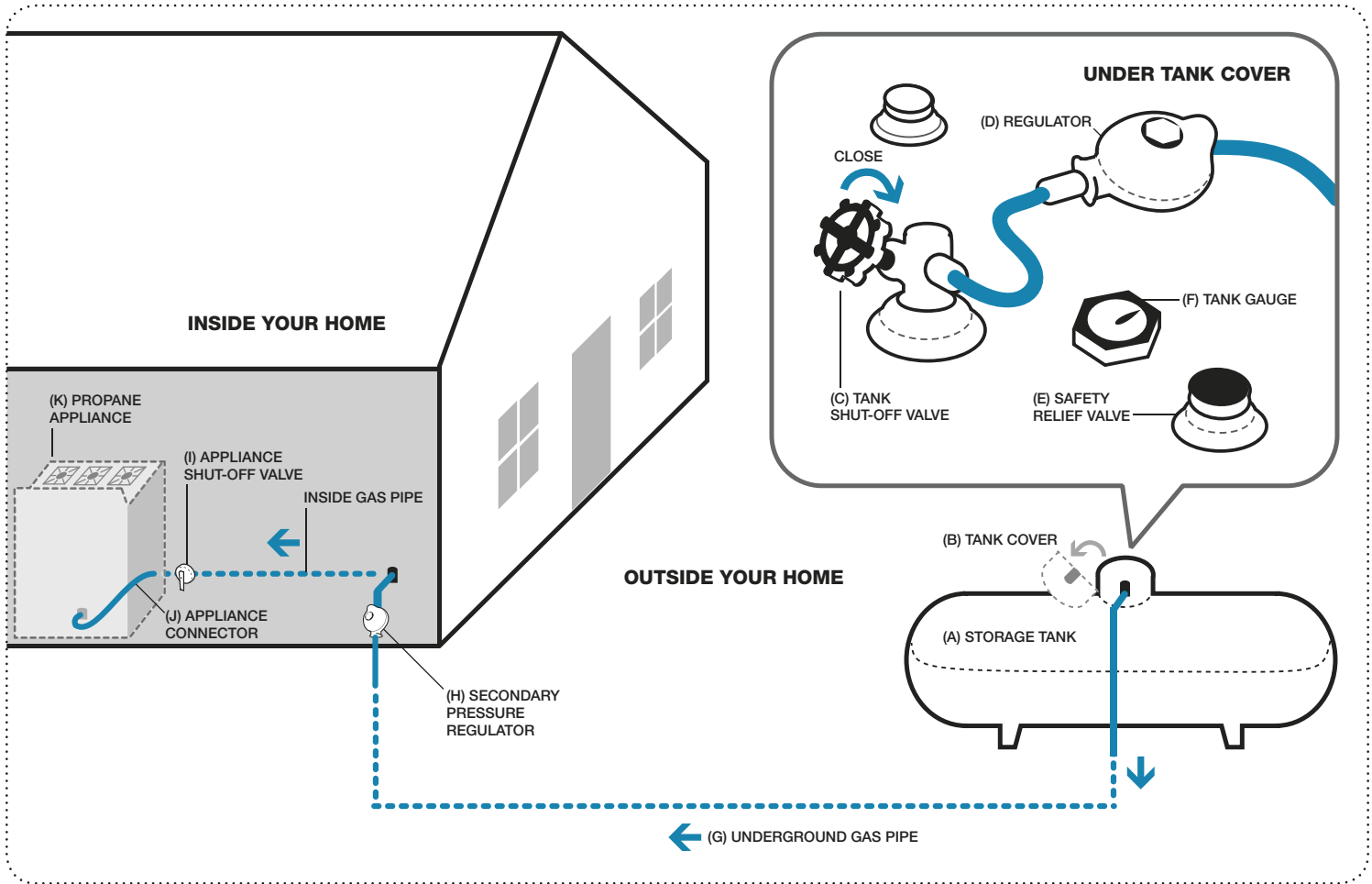
# YOUR PROPANE SYSTEM

# 4

How Does Propane Get to Your House?

\* **USER TIP:**

Become familiar with your propane system so you can take quick and appropriate action in case of a leak or other emergency situation.

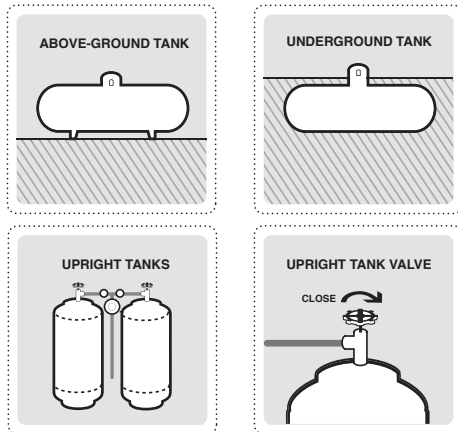


## HOW DOES PROPANE GET TO YOUR HOUSE?

It is important to become familiar with the parts of your propane system so that you can take quick and appropriate action in case of a leak or other emergency. The illustration at left shows a typical home propane system.

Propane is delivered to your home as a liquid and is pumped into a specially designed storage tank (A). The liquid changes to gas before it leaves the tank. Propane tanks are typically painted white or silver to reflect heat and prevent the pressure inside the tank from getting too high.

If you have an underground tank, only the cover (B) will be visible above ground.



The cover on top of the tank protects several components from weather and physical damage, including:

- The tank shut-off valve (C), which you can close to stop the flow of propane to your home in case of a leak or other emergency.
- The regulator (D), which controls the pressure of the propane gas coming out of the tank.
- The safety relief valve (E), which will pop open automatically if the pressure inside the tank gets too high. The valve will close again when the pressure returns to normal.
- The tank gauge (F), which shows the percentage of propane in the tank.

Propane flows from your tank to your home through pipes (G), most of which run underground.

You may also have a secondary pressure regulator (H) on an outside wall of your home to further adjust gas pressure.

A shut-off valve (I) in each pipe can be closed to stop gas flow to an individual appliance.

An appliance connector (J) is the final segment in the gas piping system. This specially designed flexible tube—typically 2 or 3 feet long—carries gas from a pipe to the back of an appliance (K).

# MAINTENANCE RECORD

DATE:	APPLIANCE:	SERVICED BY:	COMMENTS:





DATE:	APPLIANCE:	SERVICED BY:	COMMENTS:



# SAFETY CHECKLIST

## THINGS TO DO RIGHT NOW:

- EMERGENCY PROCEDURES.** Learn what to do in the event that you smell gas, and about the dangers that carbon monoxide can pose. Review the section at the front of this manual titled, “Read This First.”
- FLAMMABLE MATERIALS.** Move any flammable and combustible materials (such as paper, clothing, wood, gasoline, and solvents) away from any propane appliances.
- LEARN ABOUT YOUR PROPANE SYSTEM.** Request a visit from your propane retailer to learn what’s “under the dome” on the top of your propane tank. Identify the shut-off valves, regulators, and safety relief valve, and how they operate.
- TALK WITH YOUR CHILDREN.** Be sure they understand the following important safety tips:
  - Take the “scratch and sniff” test to learn what propane smells like.
  - If you smell gas, tell an adult right away and then go outside.
  - Do not turn or play with the knobs or other controls on a stove, oven, water heater, or other appliance.
  - Do not play around or climb on a propane tank, gas line, appliance, or other parts of the propane system.

---

## THINGS TO DO AT THE START OF THE HEATING SEASON:

- ANNUAL SAFETY CHECK.** Once a year (at the start of the heating season), ask your propane retailer to do a complete safety check of your propane system and appliances.

---

## THINGS TO DO AS NEEDED:

- MONITOR YOUR FUEL GAUGE.** Check the fuel gauge on your propane tank periodically. Contact your propane retailer if the propane level is running low (less than 20%).
- If you do run out of gas, close the shut-off valve on your propane tank.



- ❑ **REPORT DAMAGE.** Alert your propane retailer to any major dents, rust, or other damage to your propane tank, appliances, and other parts of your propane system.
  
- ❑ **UNCONNECTED GAS LINES.** Be sure that any unconnected gas lines are plugged or capped. Contact a qualified service technician to do this job safely.
  
- ❑ **CLOSING UP A HOUSE.** When closing up a house for an extended absence, consider shutting off the propane system at the tank as well as at each appliance. When you return, ask your propane retailer to re-light your pilot lights and restore gas service.
  
- ❑ **ICE AND SNOW.** Carefully clear snow and ice from regulators, regulator vents, piping, tubing, and valves, as well as from your tank and the area around it.
  
- ❑ **AFTER A STORM.** After high winds, heavy rain, or any other weather emergency, check your propane tank and system. If anything appears to have been damaged, contact your propane retailer right away.

# IMPORTANT CONTACTS



## EMERGENCY CONTACTS

POLICE DEPARTMENT:

FIRE DEPARTMENT:



## PROPANE RETAILER

For more information, please visit:  
[www.usepropane.com](http://www.usepropane.com)

IMPORTANT **PROPANE**  
**SAFETY** INFORMATION

Brought to you by





## 1. Product and company identification

<b>Product name</b>	PROPANE
<b>MSDS #</b>	0000000791
<b>Historic MSDS #:</b>	06535, 12179, 01822
<b>Code</b>	0000000791
<b>Product use</b>	Industrial applications
<b>Manufacturer</b>	BP Canada Energy Company 240 - 4 Avenue S.W. P.O. Box 200, Station M Calgary, Alberta T2P 2H8 CANADA
<b>Supplier</b>	BP Canada Energy Company 240 - 4 Avenue S.W. P.O. Box 200, Station M Calgary, Alberta T2P 2H8 CANADA
<b>EMERGENCY HEALTH INFORMATION:</b>	1 (800) 447-8735 Outside the US: +1 703-527-3887 (CHEMTREC)
<b>EMERGENCY SPILL INFORMATION:</b>	1 (613) 996-6666 CANUTEC (Canada)
<b>OTHER PRODUCT INFORMATION</b>	1 (866) 4 BP - MSDS (866-427-6737 Toll Free - North America) email: bpcares@bp.com

## 2. Hazards identification

<b>Physical state</b>	Gas. [Liquefied gas]
<b>Color</b>	Colorless.
<b>Emergency overview</b>	DANGER !  EXTREMELY FLAMMABLE. VAPOR MAY CAUSE FLASH FIRE. AT VERY HIGH CONCENTRATIONS, CAN DISPLACE THE NORMAL AIR AND CAUSE SUFFOCATION FROM LACK OF OXYGEN. Liquid can cause burns similar to frostbite.  Eliminate all ignition sources. Contains gas under pressure. Extremely flammable gas. In a fire or if heated, a pressure increase will occur and the container may burst or explode. Simple asphyxiant. At very high concentrations, can displace the normal air and cause suffocation from lack of oxygen. Keep away from heat, sparks and flame. Do not puncture or incinerate container. Do not enter storage areas and confined spaces unless adequately ventilated. Avoid breathing gas. Avoid contact with skin and clothing. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use.
<b>Routes of entry</b>	Dermal contact. Eye contact. Inhalation.
<b>Potential health effects</b>	
<b>Eyes</b>	Contact with rapidly expanding gas may cause burns or frostbite.
<b>Skin</b>	Contact with rapidly expanding gas may cause burns or frostbite.
<b>Inhalation</b>	At very high concentrations, can displace the normal air and cause suffocation from lack of oxygen.

**Product name** PROPANE

**Product code** 0000000791

**Page:** 1/6

**Version** 1 **Date of issue** 09/25/2007.

**Format** Canada

**Language** ENGLISH.

Build 6.3.2 (Canada)

(ENGLISH)

Ingestion

Not applicable (gas).

See toxicological information (section 11).

### 3. Composition/information on ingredients

Ingredient name	CAS #	%
Propane	74-98-6	95 - 100

### 4. First aid measures

<b>Eye contact</b>	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.
<b>Skin contact</b>	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention if symptoms occur.
<b>Inhalation</b>	If inhaled, remove to fresh air. If fumes are still suspected to be present, the rescuer should wear an appropriate mask or a self-contained breathing apparatus. Get medical attention if adverse health effects persist or are severe.
<b>Ingestion</b>	As this product is a gas, refer to the inhalation section.

### 5. Fire-fighting measures

<b>Flammability of the product</b>	Extremely flammable gas.
<b>Auto-ignition temperature</b>	449.9°C (841.8°F)
<b>Flash point</b>	Closed cup: -104.4°C (-155.9°F)
<b>Explosion limits</b>	Lower: 2.1% Upper: 9.5%
<b>Fire/explosion hazards</b>	Contains gas under pressure. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion.
<b>Unusual fire/explosion hazards</b>	Explosive in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.
<b>Extinguishing media</b>	
<b>Suitable</b>	Use an extinguishing agent suitable for surrounding fires.
<b>Not suitable</b>	Do not use water jet.
<b>Fire-fighting procedures</b>	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containing vessels from fire area if without risk. Use water spray to keep fire-exposed containers cool. If involved in fire, shut off flow immediately if it can be done without risk. If this is impossible, withdraw from area and let fire burn. Fight fire from protected location or maximum possible distance.
<b>Hazardous combustion products</b>	Decomposition products may include the following materials: carbon oxides (CO, CO <sub>2</sub> ) (carbon monoxide, carbon dioxide)
<b>Protective clothing (fire)</b>	Fire fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full facepiece operated in positive pressure mode.

### 6. Accidental release measures

<b>Personal precautions</b>	Accidental releases pose a serious fire or explosion hazard. Immediately contact emergency personnel. No action shall be taken involving any personal risk or without suitable training. Keep unnecessary and unprotected personnel from entering. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
-----------------------------	---

Product name PROPANE

Product code 0000000791

Page: 2/6

Version 1 Date of issue 09/25/2007.

Format Canada

Language ENGLISH.

Build 6.3.2 (Canada)

(ENGLISH)

## Environmental precautions

Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

## Methods and materials for containment and clean-up

### Large spill

Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.

### Small spill

Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.

---

## 7. Handling and storage

### Handling

Put on appropriate personal protective equipment (see Section 8). Workers should wash hands and face before eating, drinking and smoking. Do not breathe gas. Avoid contact with eyes, skin and clothing. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Store and use away from heat, sparks, open flame, or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. High pressure gas.

### Storage

Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10). Eliminate all ignition sources. Keep container tightly closed and sealed until ready for use.

---

## 8. Exposure controls/personal protection

### Occupational exposure limits

#### Ingredient name

#### Occupational exposure limits

Propane

**Alberta OH&S (Canada, 2007).**  
STEL: 1500 ppm 15 minute(s).  
TWA: 1000 ppm 8 hour(s).

While specific OELs for certain components may be shown in this section, other components may be present in any mist, vapor or dust produced. Therefore, the specific OELs may not be applicable to the product as a whole and are provided for guidance only.

#### Control Measures

Use only with adequate ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. The engineering controls also need to keep gas, vapor or dust concentrations below any explosive limits. Use explosion-proof ventilation equipment.

#### Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing.

#### Personal protection

##### Eyes

Safety glasses with side shields.

##### Skin and body

None required; however, use of protective clothing is good industrial practice.

##### Respiratory

The gas can cause asphyxiation without warning by replacing the oxygen in the air. Use adequate ventilation. If operating conditions cause high vapor concentrations or TLV is exceeded, use supplied-air respirator.

##### Hands

The correct choice of protective gloves depends upon the chemicals being handled, the conditions of work and use, and the condition of the gloves (even the best chemically resistant glove will break down after repeated chemical exposures). Most gloves provide only a short time of protection before they must be discarded and replaced. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Gloves should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions.

Consult your supervisor or S.O.P. for special handling directions

Product name PROPANE

Product code 0000000791

Page: 3/6

Version 1 Date of issue 09/25/2007.

Format Canada

Language ENGLISH.

Build 6.3.2 (Canada)

(ENGLISH)

---

## 9. Physical and chemical properties

<b>Physical state</b>	Liquefied gas
<b>Color</b>	Colorless.
<b>Odor</b>	Odorless.
<b>Odor threshold</b>	Not available.
<b>Flash point</b>	Closed cup: -104.4°C (-155.9°F)
<b>Explosion limits</b>	Lower: 2.1% Upper: 9.5%
<b>Auto-ignition temperature</b>	449.9°C (841.8°F)
<b>Specific gravity</b>	0.59
<b>pH</b>	Not available.
<b>Boiling point / Range</b>	-42°C (-43.6°F)
<b>Melting point / Range</b>	-186°C (-302.8°F)
<b>Critical temperature</b>	96.7°C (206.1°F)
<b>Vapor pressure</b>	767.952 kPa (5775 mm Hg)
<b>Vapor density</b>	1.6 [Air = 1]
<b>Evaporation rate</b>	Not available.
<b>Solubility</b>	Insoluble in water.
<b>LogK<sub>ow</sub></b>	2.36

---

## 10. Stability and reactivity

<b>Stability and reactivity</b>	The product is stable. Under normal conditions of storage and use, hazardous polymerization will not occur.
<b>Conditions to avoid</b>	Keep away from heat, sparks and flame.
<b>Incompatibility with various substances</b>	Avoid chlorine, fluorine, and other strong oxidizers, nitric and sulfuric acids.
<b>Hazardous decomposition products</b>	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
<b>Hazardous polymerization</b>	Will not occur.

---

## 11. Toxicological information

<b>Other information</b>	This material is an asphyxiant. Asphyxiants may reduce the oxygen concentration in the air to dangerous levels. Symptoms of lack of oxygen include increased depth and frequency of breathing, air hunger, dizziness, headache, nausea or loss of consciousness.
<b>Potential chronic health effects</b>	
<b>Carcinogenicity</b>	No known significant effects or critical hazards.
<b>Mutagenicity</b>	No known significant effects or critical hazards.
<b>Teratogenicity</b>	No known significant effects or critical hazards.
<b>Fertility effects</b>	No known significant effects or critical hazards.
<b>Reproductive effects</b>	No known significant effects or critical hazards.
<b>Medical conditions aggravated by over-exposure</b>	None known.

**Product name** PROPANE

**Product code** 0000000791

**Page:** 4/6

**Version** 1 **Date of issue** 09/25/2007.

**Format** Canada

**Language** ENGLISH.

Build 6.3.2 (Canada)

(ENGLISH)



## 12. Ecological information

No testing has been performed by the manufacturer.

## 13. Disposal considerations

### Waste information

The generation of waste should be avoided or minimised wherever possible. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Do not puncture or incinerate container. Empty pressure vessels should be returned to the supplier.

**NOTE: The generator of waste has the responsibility for proper waste identification (based on characteristic(s) or listing), transportation and disposal**

## 14. Transport information

### International transport regulations

Regulatory information	UN number	Proper shipping name	Class	Packing group	Additional information
DOT Classification	UN1978	Propane	2.1	Not applicable.	-
TDG Classification	UN1978	Propane	2.1	Not applicable.	-
IMDG Classification	UN1978	Propane	2.1	Not applicable.	-
IATA/ICAO Classification	UN1978	Propane	2.1	Not applicable.	-

## 15. Regulatory information

### U.S. Federal regulations

**United States inventory (TSCA 8b):** All components are listed or exempted.

### WHMIS (Canada)

Class A: Compressed gas.  
Class B-1: Flammable gas.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

### Inventories

**Canada inventory:** All components are listed or exempted.

**Europe inventory:** All components are listed or exempted.

**Australia inventory (AICS):** All components are listed or exempted.

**China inventory (IECSC):** All components are listed or exempted.

**Japan inventory (ENCS):** All components are listed or exempted.

**Korea inventory (KECI):** All components are listed or exempted.

**Philippines inventory (PICCS):** All components are listed or exempted.

Product name PROPANE

Product code 0000000791

Page: 5/6

Version 1 Date of issue 09/25/2007.

Format Canada

Language ENGLISH.

Build 6.3.2 (Canada)

(ENGLISH)

---

## 16. Other information

### Label requirements

DANGER !

EXTREMELY FLAMMABLE.

VAPOR MAY CAUSE FLASH FIRE.

AT VERY HIGH CONCENTRATIONS, CAN DISPLACE THE NORMAL AIR AND CAUSE SUFFOCATION FROM LACK OF OXYGEN.

Liquid can cause burns similar to frostbite.

### History

#### Date of issue

09/25/2007.

#### Date of previous issue

No Previous Validation.

#### Prepared by

Product Stewardship

### Notice to reader

*NOTICE : This Material Safety Data Sheet is based upon data considered to be accurate at the time of its preparation. Despite our efforts, it may not be up to date or applicable to the circumstances of any particular case. We are not responsible for any damage or injury resulting from abnormal use, from any failure to follow appropriate practices or from hazards inherent in the nature of the product.*

**Product name** PROPANE

**Product code** 0000000791

**Page:** 6/6

**Version** 1 **Date of issue** 09/25/2007.

**Format** Canada

**Language** ENGLISH.

Build 6.3.2 (Canada)

(ENGLISH)



## 1. Chemical product and company identification

<b>Product name</b>	PROPANE WITH ODORANT
<b>MSDS #</b>	0000001782
<b>Historic MSDS #:</b>	12180 (Amoco), 01822
<b>Code</b>	0000001782
<b>Product use</b>	Industrial applications
<b>Manufacturer</b>	BP Canada Energy Company 240 - 4 Avenue S.W. P.O. Box 200, Station M Calgary, Alberta T2P 2H8 CANADA
<b>Supplier</b>	BP Canada Energy Company 240 - 4 Avenue S.W. P.O. Box 200, Station M Calgary, Alberta T2P 2H8 CANADA
<b>EMERGENCY HEALTH INFORMATION:</b>	1 (800) 447-8735 Outside the US: +1 703-527-3887 (CHEMTREC)
<b>EMERGENCY SPILL INFORMATION:</b>	1 (613) 996-6666 CANUTEC (Canada)
<b>OTHER PRODUCT INFORMATION</b>	1 (866) 4 BP - MSDS (866-427-6737 Toll Free - North America) email: bpcares@bp.com

## 2. Composition/information on ingredients

Ingredient name	CAS #	%
Propane	74-98-6	100
Ethyl mercaptan	75-08-1	< 0.1

## 3. Hazards identification

<b>Physical state</b>	Gas. [Liquefied gas]
<b>Color</b>	Colorless.
<b>Emergency overview</b>	DANGER!  EXTREMELY FLAMMABLE. VAPOR MAY CAUSE FLASH FIRE. AT VERY HIGH CONCENTRATIONS, CAN DISPLACE THE NORMAL AIR AND CAUSE SUFFOCATION FROM LACK OF OXYGEN. Liquid can cause burns similar to frostbite.  Keep away from heat, sparks and flame. Avoid contact with eyes, skin and clothing. Do not breathe vapor or mist. Keep container closed. Use only with adequate ventilation.
<b>Routes of entry</b>	Dermal contact. Eye contact. Inhalation.
<b>Potential health effects</b>	
<b>Eyes</b>	Liquid can cause burns similar to frostbite. Will cause serious damage to the eyes.
<b>Skin</b>	Liquid can cause burns similar to frostbite.

<b>Product name</b> PROPANE WITH ODORANT	<b>Product code</b> 0000001782	<b>Page:</b> 1/6
<b>Version</b> 2	<b>Date of issue</b> 08/24/2007.	<b>Format</b> CA-COMP
		<b>Language</b> ENGLISH.
	Build 5.3.5	( ENGLISH )

**Inhalation** At very high concentrations, can displace the normal air and cause suffocation from lack of oxygen.

**Ingestion** Not applicable. Liquefied gas.

See toxicological Information (section 11).

---

## 4. First aid measures

**Eye contact** Contact with liquid: Immediately flush with plenty of tepid water (105-115 F; 41-46 C). DO NOT USE HOT WATER. Get immediate medical attention.

**Skin contact** Contact with liquid: Immediately flush with plenty of tepid water (105-115 F; 41-46 C). DO NOT USE HOT WATER. Get immediate medical attention. Remove contaminated clothing and shoes.

**Inhalation** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

**Ingestion** Not applicable. Liquefied gas.

---

## 5. Fire-fighting measures

**Flammability of the product** Extremely flammable.

**Auto-ignition temperature** 449.9 °C (841.8 °F)

**Flash point** -104.4 °C (-155.9 °F) (Closed cup)

**Explosion limits** Lower: 2.1 %  
Upper: 9.5 %

**Products of combustion** carbon oxides (CO, CO<sub>2</sub>) (carbon monoxide, carbon dioxide); Smoke as products of incomplete combustion.

**Unusual fire/explosion hazards** Flammable gas and vapor. Gas may accumulate in confined areas, travel considerable distance to source of ignition and flash back causing fire or explosion.

Vapors may form explosive mixtures with air. Vapor may cause flash fire. Vapors may accumulate in low or confined areas, travel considerable distance to source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. Container explosion may occur under fire conditions or when heated.

**Fire-fighting media and instructions** In case of fire, allow gas to burn if flow cannot be shut off immediately. Apply water from a safe distance to cool container and protect surrounding area.

**Protective clothing (fire)** Fire-fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear.

---

## 6. Accidental release measures

**Personal precautions** Immediately contact emergency personnel. Eliminate all ignition sources. Keep unnecessary personnel away. Use suitable protective equipment (See Section: "Exposure controls/personal protection"). Follow all fire fighting procedures (See Section: "Fire-fighting measures"). Do not touch or walk through spilled material.

**Environmental precautions and clean-up methods** If emergency personnel are unavailable, contain spilled material. For small spills add absorbent (soil may be used in the absence of other suitable materials) and use a non-sparking or explosion proof means to transfer material to a sealed, appropriate container for disposal. For large spills dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal. Avoid contact of spilled material with soil and prevent runoff entering surface waterways. See Section 13 for Waste Disposal Information.

**Personal protection in case of a large spill** Chemical splash goggles. Chemical resistant protective suit. Boots. Chemical resistant gloves. Vapor respirator or a self-contained breathing apparatus. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

CAUTION: The protection provided by air-purifying respirators is limited. Use a positive pressure air-supplied respirator if there is any potential for an uncontrolled release, if exposure levels are not known, or if concentrations exceed the protection limits of air-purifying respirator.

**Product name** PROPANE WITH ODORANT

**Product code** 0000001782

**Page:** 2/6

**Version** 2 **Date of issue** 08/24/2007.

**Format** CA-COMP

**Language** ENGLISH.

Build 5.3.5

( ENGLISH )

## 7. Handling and storage

**Handling** Keep away from heat, sparks and flame. Keep container closed. Use only with adequate ventilation. Do not breathe vapor or mist. Take precautionary measures against static discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Avoid contact with skin and eyes.

**Storage** Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready to use. Avoid all possible sources of ignition (spark or flame).

## 8. Exposure controls/personal protection

### Occupational exposure limits

#### Ingredient name

#### Occupational exposure limits

Propane

**Alberta OH&S (Canada, 2007).**  
STEL: 1500 ppm 15 minute(s).  
TWA: 1000 ppm 8 hour(s).  
**ACGIH TLV (United States, 1/2007).**  
TWA: 1000 ppm 8 hour(s).

Ethyl mercaptan

**Alberta OH&S (Canada, 2004).**  
OEL: 0.5 ppm 8 hour(s).  
**British Columbia OH&S (Canada, 2007).**  
TWA: 0.5 ppm 8 hour(s).  
**ACGIH TLV (United States, 1/2007).**  
TWA: 1.3 mg/m<sup>3</sup> 8 hour(s).  
TWA: 0.5 ppm 8 hour(s).

#### Control Measures

Provide exhaust ventilation or other engineering controls to keep the relevant airborne concentrations below their respective occupational exposure limits. In accordance with good industrial hygiene and safety work practices, airborne exposures should be controlled to the lowest extent practicable.

#### Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period.

#### Personal protection

##### Eyes

Avoid contact with eyes. Chemical splash goggles.

##### Skin and body

Avoid contact with skin and clothing. Wear clothing and footwear that cannot be penetrated by chemicals or oil.

##### Respiratory

Use only with adequate ventilation. Do not breathe vapor or mist. If operating conditions cause high vapor concentrations or TLV is exceeded, use supplied-air respirator.

##### Hands

Insulated gloves suitable for low temperatures

The correct choice of protective gloves depends upon the chemicals being handled, the conditions of work and use, and the condition of the gloves (even the best chemically resistant glove will break down after repeated chemical exposures). Most gloves provide only a short time of protection before they must be discarded and replaced. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Gloves should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions.

Consult your supervisor or S.O.P. for special handling directions

**Consult local authorities for acceptable exposure limits.**

**Product name** PROPANE WITH ODORANT

**Product code** 0000001782

**Page:** 3/6

**Version** 2

**Date of issue** 08/24/2007.

**Format** CA-COMP

**Language** ENGLISH.

Build 5.3.5

( ENGLISH )

---

## 9. Physical and chemical properties

<b>Physical state</b>	Gas. [Liquefied gas]
<b>pH</b>	Not available.
<b>Odor</b>	mercaptan, skunky odor.
<b>Odor threshold</b>	Not available.
<b>Color</b>	Colorless.
<b>Heat of combustion</b>	Not available.
<b>Boiling point / Range</b>	-42°C (-43.6°F)
<b>Melting point / Range</b>	-186°C (-302.8°F)
<b>Critical temperature</b>	96.7°C (206°F)
<b>Specific gravity</b>	0.59
<b>Vapor pressure</b>	767.952 kPa (5775 mm Hg)
<b>Vapor Density (Air = 1)</b>	1.6
<b>Evaporation rate</b>	Not available.
<b>Solubility</b>	Insoluble in cold water.
<b>LogK<sub>ow</sub></b>	2.36

---

## 10. Stability and reactivity

<b>Stability and reactivity</b>	Stable under recommended storage and handling conditions (See Section: "Handling and storage").
<b>Conditions to avoid</b>	Keep away from heat, sparks and flame. Avoid all possible sources of ignition (spark or flame).
<b>Incompatibility with various substances</b>	Vapors may form explosive mixtures with air. Avoid chlorine, fluorine, and other strong oxidizers, nitric and sulfuric acids.
<b>Hazardous decomposition products</b>	carbon oxides (CO, CO <sub>2</sub> ) (carbon monoxide, carbon dioxide); Smoke as products of incomplete combustion.
<b>Hazardous polymerization</b>	Will not occur.

---

## 11. Toxicological information

### Chronic toxicity

#### Carcinogenic effects

No component of this product at levels greater than 0.1% is identified as a carcinogen by ACGIH or the International Agency for Research on Cancer (IARC). No component of this product present at levels greater than 0.1% is identified as a carcinogen by the U.S. National Toxicology Program (NTP) or the U.S. Occupational Safety and Health Act (OSHA).

### Other information

This material is an asphyxiant. Asphyxiants may reduce the oxygen concentration in the air to dangerous levels. Symptoms of lack of oxygen include increased depth and frequency of breathing, air hunger, dizziness, headache, nausea or loss of consciousness.

---

## 12. Ecological information

### Ecotoxicity

No testing has been performed by the manufacturer.

### Mobility

This product is likely to volatilize rapidly into the air because of its high vapor pressure. This product is not likely to move rapidly with surface or groundwater flows because of its low water solubility.

---

**Product name** PROPANE WITH ODORANT

**Product code** 0000001782

**Page:** 4/6

**Version** 2

**Date of issue** 08/24/2007.

**Format** CA-COMP

**Language** ENGLISH.

Build 5.3.5

( ENGLISH )

## 13. Disposal considerations





### Waste information

Dispose of in accordance with all applicable local and national regulations. Do not puncture or incinerate container. Empty containers may contain harmful, flammable/combustible or explosive residue or vapors. Do not cut, grind, drill, weld, reuse or dispose of containers unless adequate precautions are taken against these hazards.

Consult your local or regional authorities.

## 14. Transport information

### International transport regulations

Regulatory information	UN number	Proper shipping name	Class	Packing group	Label	Additional information
<b>DOT Classification</b>	UN1978	Propane	2.1	Not applicable (gas).		Not determined.
<b>TDG Classification</b>	UN1978	Propane	2.1	Not applicable (gas).		Not determined.
<b>IMDG Classification</b>	UN1978	Propane	2.1	Not applicable (gas).		Not determined.
<b>IATA/ICAO Classification</b>	UN1978	Propane	2.1	Not applicable (gas).		Not determined.

## 15. Regulatory information

### U.S. Federal regulations

**United States inventory (TSCA 8b):** All components are listed or exempted.

### WHMIS (Canada)

Class A: Compressed gas.  
Class B-1: Flammable gas.

If listed, this product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations for those regulated products.

### Inventories

**Canada inventory:** All components are listed or exempted.

**Europe inventory:** All components are listed or exempted.

**Australia inventory (AICS):** All components are listed or exempted.

**China inventory (IECSC):** All components are listed or exempted.

**Japan inventory (ENCS):** All components are listed or exempted.

**Korea inventory (KECI):** All components are listed or exempted.

**Philippines inventory (PICCS):** All components are listed or exempted.

**Product name** PROPANE WITH ODORANT

**Product code** 0000001782

**Page:** 5/6

**Version** 2

**Date of issue** 08/24/2007.

**Format** CA-COMP

**Language** ENGLISH.

Build 5.3.5

( ENGLISH )

## 16. Other information

### Label requirements

DANGER!

EXTREMELY FLAMMABLE. VAPOR MAY CAUSE FLASH FIRE.  
AT VERY HIGH CONCENTRATIONS, CAN DISPLACE THE NORMAL AIR AND CAUSE  
SUFFOCATION FROM LACK OF OXYGEN.

Liquid can cause burns similar to frostbite.

### History

#### Date of issue

08/24/2007.

#### Date of previous issue

09/14/2004.

#### Prepared by

Product Stewardship

### Notice to reader

*NOTICE : This Material Safety Data Sheet is based upon data considered to be accurate at the time of its preparation. Despite our efforts, it may not be up to date or applicable to the circumstances of any particular case. We are not responsible for any damage or injury resulting from abnormal use, from any failure to follow appropriate practices or from hazards inherent in the nature of the product.*

**Product name** PROPANE WITH ODORANT

**Product code** 0000001782

**Page:** 6/6

**Version** 2

**Date of issue** 08/24/2007.

**Format** CA-COMP

**Language** ENGLISH.

Build 5.3.5

( ENGLISH )