Material Safety Data Sheet

Propane, Commercial

AIR LIQUIDE

Section 1. Chemical product and company identification

Commercial name(s). : **Propane, commercial; LPG (Liquefied Petroleum Gas); LP-Gas**
Material uses : Various.
Supplier/Manufacturer : Air Liquide Canada Inc. 1250, René-Lévesque West, Suite 1700, Montreal, QC H3B 5E6
In case of emergency : (514) 878-1667

Section 2. Hazards identification

Physical state : Gas or liquefied gas.
Emergency overview : WARNING!

FLAMMABLE GAS. GAS MAY CAUSE FLASH FIRE. HIGH PRESSURE GAS. CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE. GAS REDUCES OXYGEN AVAILABLE FOR BREATHING.

Keep away from sources of ignition. Keep away from heat (<52°C/125°F). Use only with adequate ventilation. Extremely hazardous gas/liquid under pressure. Keep cylinder valve, closed when the product is not used.

Routes of entry : Inhalation. Dermal contact. Eye contact.

Potential acute health effects

Inhalation : Inhalation of this product may cause dizziness, an irregular heartbeat, narcosis, nausea or asphyxiation.

Skin : No known significant effects or critical hazards.

Eyes : No known significant effects or critical hazards.

Ingestion : Since the product is a gas, it will probably be inhaled rather than ingested. Consider first the preventive measures in case of inhalation. Ingestion of liquid can cause burns similar to frostbite.

Potential chronic health effects : CARCINOGENIC EFFECTS: Classified None. by NIOSH [Propylene]. Classified A4 (Not classifiable for humans or animals.) by ACGIH, 3 (Not classifiable for humans.) by IARC [Propylene].
MUTAGENIC EFFECTS: Not available.
TERATOGENIC EFFECTS: Not available.

Medical conditions aggravated by over-exposure : Repeated or prolonged exposure to the substance can produce target organs damage.

See toxicological information (Section 11)

Section 3. Composition, Information on Ingredients

	CAS number	mole %
Canada		
Propane	74-98-6	90 - 99
Ethane	74-84-0	0 - 5
Propylene	115-07-1	0 - 5
n-Butane	106-97-8	0 - 2.5
Ethyl Mercaptan (Odourant)	75-08-1	0.5 ppm

This material is classified hazardous under the WHMIS Controlled Product Regulation in Canada.
See Chapters 8, 11, 14 and 15 for details.

Section 4. First aid measures

Prompt medical attention is mandatory in all cases of overexposure to this gaseous mixture. Rescue personnel should wear a self-contained breathing apparatus and be aware of extreme fire and explosion hazard.

Inhalation : In case of inhalation, conscious persons should be assisted to an uncontaminated area and inhale fresh air. The person should be kept warmed and calm. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, given assisted resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive.

Skin contact : Remove contaminated clothing and rinse affected skin with lukewarm water. Do not rinse with hot water. Provide medical prompt attention, frozen tissue is painless and appear waxy, with a possible yellow color. Frozen tissue will become swollen, painful and prone to infection when thawed.

Eye contact : Individual in contact with a gas should not wear contact lenses. Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 20 minutes. Get medical attention if symptoms occur.

Ingestion : Since the product is a gas, it will probably be inhaled rather than ingested. Consider first the preventive measures in case of inhalation.

Notes to physician : The medical doctor must be warned that the person may suffer from anoxia.

Section 5. Fire-fighting measures

Flammability of the product : Flammable.

Auto-ignition temperature : 480°C (896°F)

Flash point : Closed cup: -103.4°C (-154.1°F) [Pensky-Martens.]

Flammable limits : Lower: 2.4%
Upper: 9.5%

Products of combustion : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Fire hazards in the presence of various substances : Extremely flammable in the presence of open flames, sparks and static discharge. Highly flammable in the presence of heat.

Explosion hazards in the presence of various substances : Explosive in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Fire-fighting media and instructions : Use an extinguishing agent suitable for the surrounding fire.

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.

Extremely flammable. Gas may accumulate in confined areas. Gas may travel considerable distance to source of ignition and flash back.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions : EVACUATE ALL PERSONNEL FROM AFFECTED AREA.
Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is on cylinder or cylinder' valve, contact the closest dealer location.

Environmental precautions : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods for cleaning up : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see section 1 for emergency contact information and section 13 for waste disposal.

Section 7. Handling and storage

Handling : Keep away from heat, sparks and flame. To avoid fire, eliminate ignition sources. Use explosion-proof electrical equipment (ventilating, lighting and material handling). Valve protection caps must remain in place unless cylinder is secured with valve outlet piped to usage point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure regulator when connecting cylinder to lower pressure piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow the cylinder. Do not tamper with (valve) safety device. Close valve after each use and when empty.

Storage : Protect cylinders from physical damage. Store in cool, dry, well-ventilated area of non combustible construction away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 52°C/125°F. Cylinders must be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in - first out" inventory system to prevent full cylinders being stored for excessive periods of time. Post "No Smoking or Open Flames" signs in the storage or use area. There should be no source of ignition in the storage or use area. Segregate from oxidizing materials.

Section 8. Exposure controls/personal protection

Engineering controls : Use only in well-ventilated areas. Gas may accumulate in confined areas.

Personal protection

Respiratory : Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands : Wear suitable gloves for the application.

Eyes : Safety glasses with side shields.

Skin/Body : Wear appropriate personal protective suit. Fire retardant clothing may be required when handling or using flammable products.
Metal cap, safety shoes are recommended when handling cylinders.

Some applications of this product may require additionnal or other specific protective clothings. Please consult your supervisor.

Personal protection in case of a major leak : Safety glasses, goggles or face shield. Impervious gloves. Full suit. Metal cap, safety boots. Wear MSHA/NIOSH-approved self-contained breathing apparatus or equivalent and full protective gear.

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling		
Ingredient	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other
propane	US ACGIH 2/2010	1000	-	-	-	-	-	-	-	-
	AB 4/2009	1000	-	-	-	-	-	-	-	-
	BC 9/2010	1000	-	-	-	-	-	-	-	-
	ON 7/2010	1000	-	-	-	-	-	-	-	-
	QC 6/2008	1000	1800	-	-	-	-	-	-	-
ethane	US ACGIH 2/2010	1000	-	-	-	-	-	-	-	-
	AB 4/2009	1000	-	-	-	-	-	-	-	-
	BC 9/2010	1000	-	-	-	-	-	-	-	-
	ON 7/2010	1000	-	-	-	-	-	-	-	-
propene	US ACGIH 2/2010	500	-	-	-	-	-	-	-	-
	AB 4/2009	500	860	-	-	-	-	-	-	-
	BC 9/2010	500	-	-	-	-	-	-	-	-
	ON 7/2010	500	-	-	-	-	-	-	-	-
Butane	US ACGIH 2/2010	1000	-	-	-	-	-	-	-	-
	AB 4/2009	1000	-	-	-	-	-	-	-	-

	BC 9/2010	600	-	-	750	-	-	-	-	-
	ON 7/2010	800	-	-	-	-	-	-	-	-
	QC 6/2008	800	1900	-	-	-	-	-	-	-

In Canadian provinces where no value is specifically suggested, the lowest value above should be used.
Consult local authorities for acceptable exposure limits.

Section 9. Physical and chemical properties

Physical state : Gas or liquefied gas.

Color : Colorless.

Odor : Boilig cabbage.

Boiling/condensation point : -42°C (-43.6°F)

Melting/freezing point : -188°C (-306.4°F)

Specific gravity : 0.51

Vapor density : 1.56 [Air = 1]

Evaporation rate : >1 (Propane) compared with ether (anhydrous)

Solubility : Partially soluble in the following materials: cold water and hot water.

Section 10. Stability and reactivity

Stability and reactivity : The product is stable.

Incompatibility with various substances : Reactive or incompatible with the following materials: oxidizing materials and acids.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Butane	LC50 Inhalation Vapor	Rat	658000 mg/m3	4 hours

Acute Effects

Inhalation : Inhalation of this product may cause dizziness, an irregular heartbeat, narcosis, nausea or asphyxiation.

Skin : No known significant effects or critical hazards.

Eyes : No known significant effects or critical hazards.

Ingestion : Since the product is a gas, it will probably be inhaled rather than ingested. Consider first the preventive measures in case of inhalation. Ingestion of liquid can cause burns similar to frostbite.

Potential chronic health effects : CARCINOGENIC EFFECTS: Classified None. by NIOSH [Propylene]. Classified A4 (Not classifiable for humans or animals.) by ACGIH, 3 (Not classifiable for humans.) by IARC [Propylene].
MUTAGENIC EFFECTS: Not available.
TERATOGENIC EFFECTS: Not available.

Target organs : Contains material which causes damage to the following organs: the nervous system, central nervous system (CNS).

Section 12. Ecological information

Aquatic ecotoxicity

Products of degradation : These gases are released as is in the atmosphere.

Section 13. Disposal considerations

Disposal : Do not attempt to dispose of the container or of its content. Return in the shipping container properly labeled, with any valve outlet plugs or caps secured and valve protection cap in place to Air Liquide Canada for proper disposal. For emergency disposal, contact the closest dealer location.

Section 14. Transport information

NAERG : 115

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label
TDG Classification	UN1075	LIQUEFIED PETROLEUM GAS	2.1	-	
IMDG Class	UN1075	LIQUEFIED PETROLEUM GAS	2.1	-	
IATA-DGR Class	UN1075	LIQUEFIED PETROLEUM GAS	2.1	-	

PG* : Packing group

Additional information

Cylinders should be transported in a secure position, in a well ventilated vehicle. The transportation of compressed gas cylinders in automobiles or in closed-body vehicles can present serious safety hazards and should be discouraged.

UN

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TDG

Explosive Limit and Limited Quantity Index
0.12

ERAP Index
3000

Passenger Carrying Ship Index
65

Passenger Carrying Road or Rail Index
Forbidden

IMDG

Emergency schedules (EmS)
_F-D_, S-U

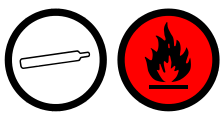
IATA

Passenger and Cargo Aircraft Quantity limitation: Forbidden
Packaging instructions: Forbidden
Cargo Aircraft Only Quantity limitation: 150 kg
Packaging instructions: 200
Limited Quantities - Passenger Aircraft
Quantity limitation: Forbidden
Packaging instructions: Forbidden

Section 15. Regulatory information

Canada

WHMIS (Canada) : Class A: Compressed gas.
Class B-1: Flammable gas.



Canadian lists : **CEPA Toxic substances**: None of the components are listed.
Canadian ARET: None of the components are listed.
Canadian NPRI: The following components are listed: Propane; Propylene;Butane
Alberta Designated Substances: None of the components are listed.
Ontario Designated Substances: None of the components are listed.
Quebec Designated Substances: None of the components are listed.

Canada inventory (DSL/NDSL) : All components are listed or exempted.

Section 16. Other information

Hazardous Material Information System (U.S.A.) :

Health	*	1
Fire hazard		4
Physical Hazard		0
Personal protection		G

National Fire Protection Association (U.S.A.) :

References : ANSI Z400.1, MSDS Standard, 2004. - Manufacturer's Material Safety Data Sheet. - Canada Gazette Part II, Vol. 122, No. 2. Registration SOR/88-64, 31 December 1987. Hazardous Products Act "Ingredient Disclosure List" - Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2005. CGA C-7 Guide to the Preparation of Precautionary Labels and Marking of Compressed Gas Containers. CGA P-20 Standard for Classification of Toxic Gas Mixtures. CGA P-23 Standard for Categorizing Gas Mixtures Containing Flammable and Nonflammable Components.

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