

# SAFETY DATA SHEET


## FOR

# Liquefied Petroleum Gas (LPG)

### 1. IDENTIFICATION: PRODUCT IDENTIFIER AND CHEMICAL IDENTITY

<b>Product Name</b>	Liquefied Petroleum Gas (LPG)
<b>Proper Shipping Name</b>	Petroleum Gases, Liquefied
<b>Other Names</b>	LPG, LP Gas, Propane, Butane, AutoGas
<b>Uses</b>	As an energy source in the residential, commercial and automotive markets. A feedstock for the petrochemical industry and as a refrigerant.
<b>Supplier Name</b>	ELGAS Ltd, A.C.N. 002 749 260
<b>Address</b>	10 Julius Avenue, North Ryde NSW 2113 PO Box 1336, Chatswood NSW 2067 AUSTRALIA
<b>Telephone</b>	(02) 8094 3200 +61 2 8094 3200 (Outside Australia)
<b>Fax</b>	(02) 9018 0146
<b>Website</b>	www.ELGAS.com.au
<b>Emergency</b>	1800 819 783 (24 hours) +61 3 9706 9897 (Outside Australia) (24 hours)

### 2. HAZARDS IDENTIFICATION

<b>GHS Classifications</b>	Flammable Gases: CATEGORY 1 Gases Under Pressure: Liquefied Gas
<b>Pictograms</b>	
<b>Signal Word</b>	DANGER
<b>Hazard Statements</b>	H220 - Extremely flammable gas H280 - Contains gas under pressure; may explode if heated
<b>Prevention Response</b>	P210 - Keep away from heat/sparks/open flames/hot sources. No smoking. P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
<b>Storage</b>	P381 - Eliminate all ignition sources if safe to do so.
<b>Other Hazards</b>	P410 + P403. Store in a well-ventilated space. High levels of exposure can lead to asphyxiation and fatal arrhythmia. Refer to Section 11 of the SDS.

### 3. COMPOSITION / INFORMATION ON INGREDIENTS

	<b>Propane</b> Proportion:	<b>Butane</b> Proportion:	<b>AutoGas</b> Proportion:	CAS Number:
LPG:				68476 – 85 – 7
Propane:	40 – 99%	<5%	40 – 99%	0074 – 98 – 6
Propene:	<60%	<5%	<20%	115 – 07 – 1
n-Butane, iso-Butane:	<7.5%	90 – 99%	<50%	106 – 97 – 8, 75 – 28 – 5
Ethane:	<5%	<5%	<5%	74 – 84 – 0
Ethyl Mercaptan (Odourant):	25 ppm	25 ppm	25 ppm	75 – 08 – 1

#### 4. FIRST AID MEASURES

**In all cases seek medical attention and see the ELGAS Super Cold Contact Injuries Hospital Information Sheet for further information and procedures.**

<b>Eye</b>	Treatment for cold burns: Immediately flush with room-temperature water or with sterile saline solution. Hold eyelids apart and irrigate for 15 minutes. Seek urgent medical attention.
<b>Inhalation</b>	Remove from area of exposure immediately. Be aware of possible explosive atmospheres. If victim is not breathing apply artificial respiration and seek urgent medical attention. Give oxygen if available. Keep warm and rested.
<b>Skin</b>	<b>For cold burns:</b> Immediately soak all clothing over the affected area and flush or soak affected skin with room-temperature to warm water (40 C max.) for a minimum of 15 minutes. For large burns, immerse the affected area in room-temperature to warm water (40 C max.) for a minimum of 15 minutes.  <b>For hot burns:</b> Immediately soak all clothing over the affected area and flush or soak affected skin with room-temperature water only for a minimum of 15 minutes. For large burns, immerse the affected area in room-temperature water only for a minimum of 15 minutes.  <b>For both hot and cold burns:</b> If required, cover the affected area with clean wet dressing or cloth and keep the dressing or cloth dripping wet with water until medical attention is obtained.  DO NOT attempt to remove any clothing which has adhered to the skin. DO NOT apply any form of direct heat to any affected area. DO NOT apply any creams or lotions to any affected areas.  Seek immediate medical attention for all burns, hot or cold.
<b>Ingestion</b>	For advice, contact a Poisons Information Centre on 13 11 26 (Australia Wide) or a doctor. Ingestion is considered unlikely due to product form.
<b>Symptoms</b>	In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. In low concentrations may cause narcotic effects. Symptoms may include dizziness, headache, nausea and loss of coordination. Direct contact with the liquefied gas or escaping compressed gas may cause cold burns.
<b>Medical Attention &amp; Special Treatment</b>	Treat symptomatically. Severe inhalation over exposure may sensitise the heart to catecholamine induced arrhythmias. Do not administer catecholamines to an overexposed person.

## 5. FIRE FIGHTING MEASURES

<b>Extinguishing</b>	<p>Evacuate the area of persons not directly involved in fighting the fire.</p> <p>Stop flow of gas if safe to do so, by closing valves or by activating the Emergency Shutdown (ESD) System.</p> <p>If the gas source cannot be isolated, <u>do NOT extinguish the flame</u>, since re-ignition of spilled gas (flash) could occur.</p> <p>Drench and cool cylinders or vessels with water spray from a protected area at a safe distance.</p> <p>If it is absolutely necessary to extinguish the flame, use only a dry chemical powder extinguisher.</p> <p>Carbon oxides (CO, CO<sub>2</sub>) fumes may be produced should burning occur especially within an enclosed space. Fumes may be hazardous to personnel.</p> <p>Fire fighters should wear full protective clothing and be aware of the risk of possible explosion (ignition of spilled LPG, especially in a confined space).</p> <p>Flashback may occur along a vapour trail. Breathing apparatus is required in confined spaces.</p> <p>Where possible, remove cool cylinders from the path of the fire.</p> <p>Do not re-use a fire-exposed vessel or cylinder as heat damaged cylinders or vessels may have developed leaks in attached fittings. Seek advice from the supplier.</p>
<b>Specific Hazards</b>	<p>Highly flammable.</p> <p>Heating to decomposition produces acrid smoke and irritating fumes.</p> <p>Product will add fuel to a fire.</p> <p>Eliminate all ignition sources including cigarettes, open flames, spark producing switches / tools, heaters, naked lights, pilot lights, mobile phones etc. when handling.</p>
<b>Precautions for Fire Fighters</b>	<p>Highly flammable.</p> <p>Temperatures in a fire may cause cylinders or pressure vessels to rupture (BLEVE) and pressure relief devices to be activated (venting of LPG vapour to atmosphere, forming flammable clouds of air-gas mixture).</p> <p>Cool cylinders and vessels exposed to fire by applying water from a protected location and with water spray directing spray primarily onto the upper surface.</p> <p>Do not approach any LPG cylinder or vessel suspected of being hot.</p>
<b>Hazchem Code</b>	2YE

## 6. ACCIDENTAL RELEASE MEASURES

<b>Personal precautions, protective equipment and emergency procedures</b>	<p>If the cylinder is leaking, eliminate all potential ignition sources and evacuate area of personnel. Inform manufacturer / supplier of leak.</p> <p>If safe to enter the area, wear appropriate PPE as detailed in Section 8 of the SDS.</p> <p>Carefully move the cylinder to a well ventilated remote area, then allow to discharge.</p> <p>For vessels, operate the Emergency Shutdown System (where fitted) and proceed as above.</p>
<b>Environmental precautions</b>	<p>As this product has a very low flash point, any spillage or leak is a fire and / or explosion hazard.</p> <p>If a leak has not ignited, stop gas flow, isolate sources of ignition and evacuate personnel.</p> <p>Ensure good ventilation.</p> <p>Liquid leaks generate large volumes of heavier than air flammable vapour which may travel to remote sources of ignition (e.g. along drainage systems).</p> <p>Where appropriate, use water spray to disperse the gas or vapour and to protect personnel attempting to stop leakage.</p> <p>Vapour may collect in any confined space.</p>
<b>Methods of containment and cleaning up</b>	<p>Stop the flow of material, if this is without risk. If the leak is irreparable, move the cylinder to a safe and well-ventilated area, and allow to discharge.</p> <p>Keep area evacuated and free from ignition sources until any leaked or spilled liquid has evaporated. LPG is unlikely to contaminate water or soil.</p>

## 7. HANDLING AND STORAGE

### **Precautions for Safe Handling**

Avoid inhalation of vapour.

Avoid contact with liquid and cold storage containers.

Avoid contact with eyes.

When handling cylinders wear protective footwear and suitable gloves.

Always ensure that cylinders are within test date, are fit for use and are leak checked prior to use.

Check for leaks by sound and smell and by locating with soapy water or with approved detection devices.

LPG liquid leaks may cause freezing and visible ice formation around the location of the leak.

Ice formation is to be encouraged as it may reduce the severity of a liquid leak by obstructing the flow before the leak is isolated. (A very fine water mist delivered from a safe distance will promote ice formation around a liquid leak).

Do not fill dented, gouged or rusty LPG cylinders vessels (refer AS 2337.1).

Fill cylinders to 80% fill level (ullage tube via decanting or mass via mechanical filling).

The maximum fill level for vessels is dependent upon their size and location as detailed in AS/NZS 1596.

Use only equipment and pipework designed and approved (where applicable) for LPG as applications.

Ensure that cylinders cannot be struck by vehicles or by dropped or rolled objects, etc.

Class 2.1 Flammable Gas products may only be loaded in the same vehicle or packed in the same freight container with the classes of products as permitted in the ADG Code (see references).

Cylinders shall only be transported in an upright, secure position in accordance with the National Road Transport Commission Load Restraint Guide.

Cylinders must not be dropped or impacted.

### **Conditions for Safe Storage**

Store and use only in vessels or cylinders designed for LPG service.

Store and dispense LPG only in well ventilated areas away from heat and sources of ignition. Do not store in unventilated buildings.

Do not transport in unventilated vehicle compartments.

Do not enter storage vessels. If entry to a vessel is necessary, contact the supplier.

Cylinders and vessels must be properly labelled. Do not remove warning labels.

LPG cylinders shall be stored in accordance with the requirements of AS/NZS 1596 and AS 4332.

Do not store in pits and basements where vapour may collect.

Store cylinders securely in an upright position. Note: forklift cylinders may be stored horizontally.

Store away from incompatible materials, particularly oxidising agents. Check vessels and cylinders are clearly labelled.

Do not contaminate cylinders or vessels with other products.

Exposure Standards	Ingredient Name	Occupational Exposure Limits
	LPG	<b>NOHSC</b> TWA: 1000 ppm 8 hour(s)
	Butane	<b>NOHSC</b> TWA: 1900 mg/m <sup>3</sup> 8 hour(s) TWA: 800 ppm 8 hour(s)
	Propane	<b>ACGIH TLV</b> TWA: 1000 ppm 8 hour(s)
	Propene	<b>ACGIH TLV</b> TWA: 500 ppm 8 hour(s)
<b>Engineering controls</b>	Avoid inhalation. Use in well ventilated areas. In poorly ventilated areas where flammable vapours may accumulate, mechanical explosion proof extraction ventilation is recommended. Do not enter confined areas (e.g. tanks). Contact the supplier.	
<b>PPE:</b>		
<b>Eye &amp; face protection</b>	Wear safety goggles or face shield.	
<b>Skin protection</b>	Wear impervious and insulating gloves to prevent cold burns and frostbite. Wear overall clothing of the anti-static, low flame spread type. When handling cylinders, wear protective footwear.	
<b>Respiratory protection</b>	Where an inhalation risk exists, wear a Self-Contained Breathing Apparatus or Airline Respirator.	

## 9. PHYSICAL AND CHEMICAL PROPERTIES

PROPERTY	PROPANE		BUTANE	
<b>Appearance</b>	<b>Colourless Gas</b>		<b>Colourless Gas</b>	
<b>Odour</b>	<b>Characteristic Odour<sup>(1)</sup></b>		<b>Characteristic Odour<sup>(1)</sup></b>	
<b>Odour Threshold</b>	<b>&gt;5000 ppm</b>		<b>&gt;5000 ppm</b>	
<b>Chemical Formula</b>	<b>C<sub>3</sub>H<sub>8</sub></b>		<b>C<sub>4</sub>H<sub>10</sub></b>	
<b>Molecular Weight</b>	<b>44.1</b>		<b>58.1</b>	
<b>Boiling Point</b>	<b>-42°C</b>		<b>-0.5°C</b>	
<b>Vapour Pressure at 40°C</b>	<b>1530 kPa (max)</b>		<b>520 kPa (max)</b>	
	Liquid at 15°C	Gas at 101 kPa & 15°C	Liquid at 15°C	Gas at 101 kPa & 15°C
Density (kg/m <sup>3</sup> )	510	1.86	568	2.47
Relative Density: water = 1.0 air = 1.0	0.510	1.53	0.568	2.00
Litres/tonne	1961	536000	1760	405000
m <sup>3</sup> /tonne	1.961	536	1.760	405
m <sup>3</sup> /m <sup>3</sup> of liquid	1.000	274	1.000	235
Specific heat of liquid (kJ/kg/°C)	2.512		2.386	
Latent heat of vapourisation (MJ/m <sup>3</sup> )	232		239	
(MJ/kg = GJ/t)	0.358		0.372	
Heat combustion (MJ/m <sup>3</sup> )	25000		28800	
(MJ/kg = GJ/t)	50.1		49.47	
Volume of air (m <sup>3</sup> ) needed to burn 1m <sup>3</sup> of gas	23.7		31.0	
Flash point	-104°C		-60°C	
Auto-ignition temp.	493-549°C		482-538°C	
Max. flame temp.	1970°C		1990°C	
Flammability	Extremely flammable	Extremely flammable	Extremely flammable	Extremely flammable
Limits of flammability in air (% by vol): upper %	9.6		8.6	
lower %	2.4		1.9	
<b>Other Properties:</b>	Solubility (water): 0.07cm <sup>3</sup> / cm <sup>3</sup>			
<b>Other name/numbers:</b>	<b>LPG</b>	UN 1075		
	<b>Propane</b>	UN 1978		
	<b>Butane</b>	UN 1011		
	<b>IsoButane</b>	UN 1969		

1) An odourant is added to LPG to assist in detection of LPG vapour.

In Australia, Ethyl Mercaptan is used as the odourant, which gives the LPG vapour a persistent and unpleasant smell of rotten cabbages, making LPG detectable by smell at levels well below the Lower Explosive Limit (LEL).

## 10. STABILITY AND REACTIVITY

<b>Reactivity</b>	Extremely flammable. Reacts violently with oxidising agents.
<b>Chemical stability</b>	Stable under recommended conditions of storage.
<b>Conditions to avoid</b>	Avoid heat, sparks, open flames and other ignition sources.
<b>Incompatible materials</b>	Incompatible with oxidising agents, acids, heat and ignition sources. Do not use natural rubber flexible hoses. Also incompatible (potentially violently) with oxygen, halogens and metal halides.
<b>Hazardous decomposition products</b>	Heating to decomposition produces acrid smoke and irritating fumes.

## 11. TOXICOLOGICAL INFORMATION

<b>Acute toxicity</b>	Non toxic.
<b>Skin corrosion/irritation</b>	Non irritating. Contact with evaporating liquid or super-cold vessels or pipes may result in frost-bite with severe tissue injury.
<b>Serious eye damage/irritation</b>	Non irritating. Direct contact with evaporating liquid may result in severe cold burns with possible permanent tissue damage.
<b>Respiratory or skin sensitisation</b>	Not classified as causing skin or respiratory sensitisation.
<b>Germ cell mutagenicity</b>	Not classified as a mutagen.
<b>Carcinogenicity</b>	Not classified as a carcinogen.
<b>Reproductive toxicity</b>	Not classified as a reproductive toxin.
<b>Specific Target Organ Toxicity (STOT) – single exposure</b>	Asphyxiant gas. Symptoms of exposure are directly related to displacement of oxygen from air. Low vapour concentrations may cause nausea, dizziness, headaches and drowsiness.  High vapour concentrations may produce symptoms of oxygen deficiency which, coupled with central nervous system depression, may lead to rapid loss of consciousness, asphyxiation and fatal arrhythmia. May have a narcotic effect if high concentrations of vapour are inhaled.
<b>Specific Target Organ Toxicity (STOT) – multiple exposure</b>	Not classified as causing organ effects from repeated exposure.
<b>Aspiration hazard</b>	Not classified as an aspiration hazard.

## 12. ECOLOGICAL INFORMATION

<b>Eco Toxicity</b>	Not toxic to flora, fauna or soil organisms. Will not cause long term adverse effects in the environment and is not dangerous to the ozone layer.
<b>Persistence / Degradability</b>	Unlikely to cause long term adverse effects in the environment.
<b>Bio-accumulative potential</b>	This material is not expected to bio-accumulate.
<b>Mobility</b>	Spillages are unlikely to penetrate the soil. The product is likely to volatilise rapidly into the air.
<b>Other Ecological Information</b>	Unlikely to cause long term effects in the aquatic environment.

## 13. DISPOSAL CONSIDERATIONS

<b>Disposal methods</b>	Cylinders should be returned to the manufacturer or supplier for disposal.  Empty cylinders or vessels may contain some remaining product.  Hazard warning labels are a guide to the safe handling of empty packaging and should not be removed. LPG cylinders or vessels should never be inadvertently disposed of in any land fill facility without being rendered visually and physically unusable before disposal.  Warning: 'empty' containers can sometimes retain residue (liquid and / or vapour) and can be dangerous.  DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS AND OTHER SOURCES OF IGNITION THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Do not attempt to clean.
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## 14. TRANSPORT INFORMATION

<b>UN Number</b>	1075
<b>Proper Shipping Name</b>	PETROLEUM GASES, LIQUEFIED
<b>Transport Hazard Class</b>	2.1
<b>Packing Group</b>	None Allocated
<b>Subsidiary Risk(s)</b>	None Allocated
<b>Environmental hazards for Transport Purposes</b>	No
<b>Special precautions for user</b>	Do not transport with dangerous goods of Class 1, 3, 4, 5 and 7. Refer to ADG Code for detailed and specific restrictions.
<b>Additional information</b>	Transport of LPG is controlled in accordance with the requirements of the ADG Code and the National Transport Commission Load Restraint Guide.
<b>Hazchem Code</b>	See Section 5

## 15. REGULATORY INFORMATION

<b>AICS</b>	All chemicals listed on the Australian Inventory of Chemical Substances (AICS).
<b>Poison Schedule</b>	A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).



**Principal Retail Centres**

**NSW Blacktown** 22 Holbeche Road  
Blacktown NSW 2148  
Phone: (02) 9672 0777  
Fax: (02) 9672 1481

**VIC Mulgrave** 331-347 Police Road  
Mulgrave VIC 3170  
Phone: (03) 9767 7222  
Fax: (03) 9767 7372

**QLD Brisbane** Tanker Street  
Lytton QLD 4178  
Phone: (07) 3396 2769  
Fax: (07) 3893 1495

**SA Adelaide** 1 Newfield Road  
Para Hills West SA 5096  
Phone: (08) 8368 4700  
Fax: (08) 8349 4624

**ACT Canberra** 3-5 Geelong Street  
Fyshwick ACT 2609  
Phone: (02) 6280 6355  
Fax: (02) 6280 4217

**Swap 'n' Go** Contact the principal retail centre in your state or territory

**WA Perth** Unit 9 Level 1, 50  
William St  
Beckenham WA 6107  
Phone: (08) 6258 9900  
Fax: (08) 9351 8888

**Stargas** Contact the principal retail centre in your state or territory

**NT Darwin** 1227 Winnellie Road  
Winnellie NT 0821  
Phone: (08) 8947 4256

**Abbreviations** ACGIH = American Conference of Governmental Industrial Hygienists

ADG Code = Australian Code for the Transport of Dangerous Goods by Road and Rail

CAS Number = Chemical Abstracts Service Registry Number

GHS = Globally Harmonised System of Classifying and Labelling of Chemicals (published by the United Nations)

HAZCHEM Code = Emergency action code of numbers and letters which gives information to emergency services

NOHSC = National Occupational Health & Safety Commission, Australia

ppm = Parts Per Million

SDS = Safety Data Sheet

TLV = Threshold Limit Value

TWA = Time Weighted Average

STEL = Short-Term Exposure Limit

UN Number = United Nations Number, a four-digit number assigned by the United Nations Committee of Experts on the Transport of Dangerous Goods

**Revision History** 1. October 2016 – Full review for compliance to GHS and the Safe Work Australia SDS Code of Practice 2011.

2. March 2018 – review and subsequent update of First-Aid and emergency response procedures.