

SAFETY DATA SHEET

FOR

Liquefied Petroleum Gas (LPGas)

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Supplier Name	Elgas Ltd, A.C.N. 002 749 260
Address	10 Julius Avenue, North Ryde NSW 2113 PO Box 1336, Chatswood NSW 2067 AUSTRALIA
Telephone	(02) 8094 3200
Fax	(02) 9018 0146
Emergency	1800 819 783 (24 hours)
Other Names	Propane, butane, propene or a combination of these products
Uses	As an energy source in the residential, commercial and automotive markets, a feedstock by the petrochemical industry, a propellant for aerosol spray cans, foam blowing applications and a refrigerant.

2. HAZARDS IDENTIFICATION

**NOT CLASSIFIED AS HAZARDOUS ACCORDING TO ASCC (NOHSC) CRITERIA.
CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE.**

3. COMPOSITION / INFORMATION ON INGREDIENTS

			CAS Number
Main Components	LP Gas	Composition in accordance with the appropriate LPG Australia specifications and state regulations	68476 – 85 – 7
	Propane		0074 – 98 – 6
	Propene		115 – 07 – 1
	n-Butane		106 – 97 – 8
Minor Components	Isobutane		75 – 28 – 5
	Ethane		74 – 84 – 0
	1,3-Butadiene	<0.1%	106 – 99 – 0
	Odourant: Ethylmercaptan	Approx 25ppm	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.	
Eye	Treatment for cold burns: Immediately flush with tepid water or with sterile saline solution. Hold eyelids apart and irrigate for 15 minutes. Seek medical attention.
Inhalation	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.
Skin	Cold burns: Remove contaminated clothing and gently flush affected areas with warm water (30 C) for 15 minutes. Apply non-adhesive sterile dressing and treat as for a thermal burn. For large burns, immerse in warm water for 15 minutes. DO NOT apply any form of direct heat. Seek immediate medical attention.
Ingestion	For advice, contact a Poisons Information Centre on 13 11 26 (Australia Wide) or a doctor. Ingestion is considered unlikely due to product form.
Advice to Doctor	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

Flammability	Highly flammable. Heating to decomposition produces acrid smoke and irritating fumes. Product will add fuel to a fire. Eliminate all ignition sources including cigarettes, open flames, spark producing switches / tools, heaters, naked lights, pilot lights, mobile phones etc. when handling.
Fire and Explosion	Highly flammable. Temperatures in a fire may cause cylinders or pressure vessels to rupture and pressure relief devices to be activated. Call Fire Brigade. This product will add fuel to a fire. 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. Do not approach any LPGas container suspected of being hot.
Extinguishing	Stop flow of gas if safe to do so, such as by closing valves or by activating Emergency Shutdown Systems. If the gas source cannot be isolated, do not extinguish the flame, since re-ignition and explosion could occur. Await arrival of emergency services. Drench and cool cylinders or vessels with water spray from protected area at a safe distance. If it is absolutely necessary to extinguish the flame, use only a dry chemical powder extinguisher. Do not move cylinders for at least 24 hours. Avoid shock and bumps to cylinders. Evacuate the area of persons not fighting the fire. Carbon oxides (CO, CO ₂) fumes may be produced should burning occur especially within an enclosed space (ie causing a deficiency of oxygen). Fire fighters should wear full protective clothing and be aware of the risk of possible explosion (especially in a confined space). Flashback may occur along vapour trail. Where possible, remove cool cylinders from the path of the fire. Do not re-use a fire-exposed vessel or cylinder – seek advice of supplier.
Hazchem Code	2YE (as defined in ADG7 published in 2007) 2WE (as defined in ADG6 published in 1998)

6. ACCIDENTAL RELEASE MEASURES

Spillage	<p>As this product has a very low flash point any spillage or leak is a fire and / or explosion hazard. 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 (eg along drainage systems). 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>
Gas Cylinders	<p>If the cylinder is leaking, eliminate all potential ignition sources and evacuate area of personnel. Inform manufacturer / supplier of leak. If safe to enter the area, wear appropriate PPE and carefully move the cylinder to a well ventilated remote area, then allow to discharge. Do not attempt to repair leaking valve or cylinder fusible plugs.</p> <p>For vessels operate the Emergency Shutdown System (where fitted) and proceed as above.</p>

7. HANDLING AND STORAGE

Precautions for Safe Handling	Avoid inhalation of vapour. Avoid contact with liquid and cold storage containers. 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. Do not fill excessively dented, gouged or rusty containers (refer AS2337.1). Only 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. Avoid contact with eyes. 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 and shall not be dropped.
Conditions for Safe Storage	Store and use only in equipment / containers designed for use with this product. Store and dispense only in well ventilated areas away from heat and sources of ignition. 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. LPGas cylinders shall be stored in accordance with the requirements of the ADG Code, AS 4332 and AS/NZS1596. 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.
Other Information	Product spilt on clothing may give rise to delayed evaporation and subsequent fire hazard. Check for leaks by sound and smell and by locating with soapy water or with approved detection devices. Use only equipment and pipework designed and approved (where applicable) for LPGas applications. Ensure that cylinders cannot be struck by forklift vehicles or by dropped or rolled objects, etc. Refer to Australian state and territory dangerous good regulations.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Ventilation	Maintain adequate ventilation. Confined areas (eg tanks) should be adequately ventilated and gas tested and must NEVER be entered unless under supervision via a Permit Procedure.	
Exposure Standards	Ingredient Name	Occupational Exposure Limits
	LP Gas	NOHSC TWA: 1000 ppm 8 hour(s)
	Butane	NOHSC TWA: 1900 mg/m ³ 8 hour(s) TWA: 800 ppm 8 hour(s)
	Propane	ACGIH TLV TWA: 1000 ppm 8 hour(s)
	Propylene	ACGIH TLV TWA: 500 ppm 8 hour(s)
PPE	Wear suitable gloves and overalls to prevent cold burns and frostbite. In filling operations wear protective clothing including impervious gloves, safety goggles or face shield. All clothing should be of the anti-static, low flame spread type. When handling cylinders wear protective footwear.	

9. PHYSICAL AND CHEMICAL PROPERTIES

PROPERTY	PROPANE		BUTANE	
Appearance	Colourless Gas		Colourless Gas	
Odour	Characteristic Odour		Characteristic Odour	
Chemical Formula	C₃H₈		C₄H₁₀	
Molecular Weight	44.1		58.1	
Boiling Point	-42°C		-0.5°C	
	Liquid at 15°C	Gas at 101 kPa & 15°C	Liquid at 15°C	Gas at 101 kPa & 15°C
Density (kg/m ³)	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 ³ /tonne	1.961	536	1.760	405
m ³ /m ³ 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 ³) (MJ/kg = GJ/t)	232 0.358		239 0.372	
Heat combustion (MJ/m ³) (MJ/kg = GJ/t)	25000 50.1	93.3 50.1	28800 49.47	121.9 49.47
Volume of air (m ³) needed to burn 1m ³ of gas		23.7		31.0
Flash point Ignition temp.		-104°C 493-549°C		-60°C 482-538°C
Max. flame temp.		1970°C		1990°C
Limits of flammability in air (% by vol): upper % lower %		9.6 2.4		8.6 1.9
Other Properties:	Solubility (water): 0.07cm ³ / cm ³			
Other name/numbers:	LPGas	UN 1075		
	Propane	UN 1978		
	Butane	UN 1011		
	IsoButane	UN 1969		

10. STABILITY AND REACTIVITY

Reactivity	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.
Decomposition Products	Heating to decomposition produces acrid smoke and irritating fumes.

11. TOXICOLOGICAL INFORMATION

Health Hazard Summary	Asphyxiant gas. Symptoms of exposure are directly related to displacement of oxygen from air.	
Eye	Non irritating. However, direct contact with evaporating liquid may result in severe cold burns with possible permanent damage.	
Inhalation	Non irritating – Asphyxiant. Effects are proportional to oxygen displacement. Low vapour concentrations may cause nausea, dizziness, headaches and drowsiness. May have a narcotic effect if high concentrations of vapour are inhaled. High vapour concentrations may produce symptoms of oxygen deficiency which, coupled with central nervous system depression, may lead to rapid loss of consciousness.	
Abuse	Under normal conditions of use the product is non hazardous, however abuse involving deliberate inhalation of very high concentrations of vapour can produce unconsciousness and / or result in a sudden fatality or brain damage.	
Skin	Non irritating. Contact with evaporating liquid or supercold vessels or pipes may result in frost-bite with severe tissue damage.	
Ingestion	Due to product form, ingestion is considered highly unlikely.	
Toxicity Data	PROPANE (74-98-6) LC50 (Inhalation) : 50,000 ppm	ISOBUTANE (75-28-5) LC50 (Inhalation): 57pph/15 min (rat)

12. ECOLOGICAL INFORMATION

Eco Toxicity	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.
Mobility	Spillages are unlikely to penetrate the soil. The product is likely to volatise rapidly into the air.
Persistence / Degradability	Unlikely to cause long term adverse effects in the environment.
Bioaccumulative Potential	This material is not expected to bioaccumulate.
Other Ecological Information	Unlikely to cause long term effects in the aquatic environment.

13. DISPOSAL CONSIDERATIONS

Waste Disposal 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. LPGas cylinders or vessels should NEVER be inadvertently disposed of in any land fill facility without being rendered visually and physically unusable before disposal. 'EMPTY' container 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.

Legislation Dispose of in accordance with relevant legislation.

14. TRANSPORT INFORMATION

Transport Transport of LPGas is controlled in accordance with the requirements of the ADG Code and the Load Restraint Guide.

UN Number 1075

Shipping Name PETROLEUM GASES, LIQUEFIED

DG Class 2.1

Subsidiary Risk(s) None Allocated

Packing Group None Allocated

Hazchem Code See Section 5

15. REGULATORY INFORMATION

AICS All chemicals listed on the Australian Inventory of Chemical Substances (AICS).

Poison Schedule 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) 8349 5050 Fax: (08) 8349 4624
ACT Canberra	9 Lithgow 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	2 Uppsala Place Canning Vale WA 6155 Phone: (08) 6465 8561 Fax: (08) 6254 2893	Stargas	Contact the principal retail centre in your state or territory
NT Darwin	1227 Winnellie Road Winnellie NT 0821 Phone: (08) 8947 4256		

References	ALPGA (now LPG Australia) Specification for Liquefied Petroleum Gas for Automotive use 2004.
	ALPGA (now LPG Australia) Specification for Liquefied Petroleum Gas for Heating use 2004.
	ACGIH = American Conference of Governmental Industrial Hygienists
	CAS Number = Chemical Abstracts Service Registry Number
	HAZCHEM Code = Emergency action code of numbers and letters which gives information to emergency services
	ICAO = International Civil Aviation Organisation
	IATA = International Air Transport Association
	IMDG = International Maritime Organisation Rules
	NOHSC = National Occupational Health & Safety Commission, Australia
	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 Petroleum and Gas Legislation / Queensland: 2004
	Australian Standards as detailed within this document
	The Australian Code for the Transport of Dangerous Goods by Road and Rail (commonly known as the ADG Code)
	The Load Restraint Guide as prepared by the National Transport Commission