SAFETY DATA SHEET

LPG, LP Gas, Propane, Butane, AutoGas

Infosafe No.: MAEBU
ISSUED Date : 31/01/2019
ISSUED by: ELGAS LTD

1. IDENTIFICATION

GHS Product Identifier
LPG, LP Gas, Propane, Butane, AutoGas

Company Name
ELGAS LTD (ABN 002 749 260)

Address
10 Julius Avenue, (PO Box 1336, Chatswood NSW 2067) North Ryde
NSW AUSTRALIA

Telephone/Fax Number
Tel: (02) 8094 3200
Fax: (02) 9018 0146

Emergency phone number
1800 819 783 (24 hours)

Recommended use of the chemical and restrictions on use
Uses: As an energy source in the residential, commercial and automotive markets. A feedstock for the petrochemical industry and as a refrigerant.

Other Names

Name	Product Code
LIQUEFIED PETROLEUM GAS (LPG)	

2. HAZARD IDENTIFICATION

GHS classification of the substance/mixture
Flammable Gases: Category 1
Gases under Pressure: Liquefied Gas

Signal Word (s)
DANGER

Hazard Statement (s)
H220 Extremely flammable gas.
H280 Contains gas under pressure; may explode if heated.

Pictogram (s)
Flame,Gas cylinder

Precautionary statement – Prevention
P210 Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

Precautionary statement – Response
P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 Eliminate all ignition sources if safe to do so.

Precautionary statement – Storage
P410+P403 Protect from sunlight. Store in a well-ventilated place.

Other Information
Other Hazards:
High levels of exposure can lead to asphyxiation and fatal arrhythmia.
Refer to Section 11 of the SDS.

3. COMPOSITION/INFORMATION ON INGREDIENTS

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

4. FIRST-AID MEASURES

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.

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.

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.

Skin
For cold burns:
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.
For hot burns:
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.
For both hot and cold burns:
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.

Eye contact
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.

Indication of immediate medical attention and special treatment needed if necessary
Treat symptomatically. Severe inhalation over exposure may sensitise the heart to catecholamine induced arrhythmias.
Do not administer catecholamines to an overexposed person.

Most important symptoms/effects, acute and delayed
Symptoms:
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.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Evacuate the area of persons not directly involved in fighting the fire.
Stop flow of gas if safe to do so, by closing valves or by activating the Emergency Shutdown (ESD) System.
If the gas source cannot be isolated, do NOT extinguish the flame, since re-ignition of spilled gas (flash) could occur.
Drench and cool cylinders or vessels with water spray from a protected area at a safe distance.
If it is absolutely necessary to extinguish the flame, use only a dry chemical powder extinguisher.
Carbon oxides (CO, CO2) fumes may be produced should burning occur especially within an enclosed space. Fumes may be hazardous to personnel.
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).
Flashback may occur along a vapour trail. Breathing apparatus is required in confined spaces.
Where possible, remove cool cylinders from the path of the fire.
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.

Specific Hazards Arising From The Chemical
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.

Hazchem Code
2YE

Precautions in connection with Fire
Highly flammable.
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).
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 LPG cylinder or vessel suspected of being hot.

6. ACCIDENTAL RELEASE MEASURES

Emergency Procedures
If a tank or cylinder is leaking, eliminate all potential ignition sources (electrical equipment and tools, open flames / burners and cigarettes), evacuate area of personnel and activate the emergency shutdown system where fitted.
If safe to so, hose the leaking tank or cylinder with water using a spray to dissipate the vapour.
Contact the Emergency Services, and ELGAS on 1800 819 783 (24 hr centre).
See Section 7 for more detail.
For a small cylinder which is leaking, move the cylinder to an open area by carrying upright, evacuate the area of personnel, and spray the cylinder with water to dissipate the vapour.
Contact the Emergency Services, and ELGAS in 1800 819 783 (24 hr centre).
Never leave or move a leaking cylinder into a confined space (building, shed or vehicle) as vapour will collect in the confined space, creating several hazards.
See Section 7 for more detail.

Methods And Materials For Containment And Cleaning Up
Stop the flow of material, if this is without risk. If the leak cannot be stopped and the cylinder can be moved, move the cylinder to a safe and well-ventilated area, and allow to discharge.
Keep area evacuated of all personnel and free from ignition sources until any leaked or spilled liquid has evaporated. LPG is unlikely to contaminate water or soil.

Environmental Precautions
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.
Ensure good ventilation.
Liquid leaks generate large volumes of heavier than air flammable vapour which may travel to remote sources of ignition (e.g. along drainage systems).
Where appropriate, use water spray to disperse the gas or vapour and to protect personnel attempting to stop leakage.
Vapour may collect in any confined space.

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, including any incompatibilities
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.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limit values
Ingredient Name: LPG
Occupational Exposure Limits:
NOHSC
TWA: 1000 ppm 8 hour(s)
Ingredient Name: Butane
Occupational Exposure Limits:
NOHSC
TWA: 1900 mg/m3 8 hour(s)
TWA: 800 ppm 8 hour(s)
Ingredient Name: Propane
Occupational Exposure Limits:
ACGIH TLV
TWA: 1000 ppm 8 hour(s)
Ingredient Name: Propene
Occupational Exposure Limits:
ACGIH TLV
TWA: 500 ppm 8 hour(s)

Appropriate Engineering Controls
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.

Respiratory Protection
Where an inhalation risk exists, wear a Self-Contained Breathing Apparatus or Airline Respirator.

Eye Protection
Wear safety goggles or face shield.

Body Protection
Wear impervious and insulating gloves to prevent cold burns and frostbite.
Wear coverall clothing of the anti-static, low flame spread type.
When handling cylinders, wear protective footwear.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form
Gas

Appearance
PROPANE
Colourless Gas
BUTANE
Colourless Gas

Odour
PROPANE
Characteristic Odour(1)
BUTANE
Characteristic Odour(1)

Boiling Point
PROPANE
-42°C
BUTANE
-0.5°C

Solubility in Water
0.07cm³ / cm³

Vapour Pressure
PROPANE
1530 kPa (max) at 40°C
BUTANE
520 kPa (max) at 40°C

Odour Threshold
PROPANE
>5000 ppm
BUTANE
>5000 ppm

Density
PROPANE
Liquid at 15°C 510
Gas at 101 kPa & 15°C: 1.86
BUTANE
Liquid at 15°C: 568
Gas at 101 kPa & 15°C: 2.47

Flash Point
PROPANE
Gas at 101 kPa & 15°C: -104°C
BUTANE
Gas at 101 kPa & 15°C: -60°C

Flammability
PROPANE
Liquid at 15°C: Extremely flammable
Gas at 101 kPa & 15°C: Extremely flammable
BUTANE
Liquid at 15°C: Extremely flammable
Gas at 101 kPa & 15°C: Extremely flammable

Auto-Ignition Temperature
PROPANE
Gas at 101 kPa & 15°C: 450°C
BUTANE
Gas at 101 kPa & 15°C: 372°C

Flammable Limits - Lower
PROPANE
Gas at 101 kPa & 15°C: 2.4
BUTANE
Gas at 101 kPa & 15°C: 1.9

Flammable Limits - Upper
PROPANE
Gas at 101 kPa & 15°C: 9.6
BUTANE
Gas at 101 kPa & 15°C: 8.6

Molecular Weight
PROPANE
44.1
BUTANE
58.1

Relative density
PROPANE
water = 1.0
Liquid at 15°C: 0.510
air = 1.0
Gas at 101 kPa & 15°C: 1.53
BUTANE
water = 1.0
Liquid at 15°C: 0.568
air = 1.0
Gas at 101 kPa & 15°C: 2.00

Other Information
Litres/tonne
PROPANE
Liquid at 15°C: 1961
Gas at 101 kPa & 15°C: 536000
BUTANE
Liquid at 15°C: 1760
Gas at 101 kPa & 15°C: 405000
m3/tonne
PROPANE
Liquid at 15°C: 1.961
Gas at 101 kPa & 15°C: 536
BUTANE
Liquid at 15°C: 1.760
Gas at 101 kPa & 15°C: 405
m3/m3 of liquid
PROPANE
Liquid at 15°C: 1.000
Gas at 101 kPa & 15°C: 274
BUTANE
Liquid at 15°C: 1.000
Gas at 101 kPa & 15°C: 235
Specific heat of liquid (kJ/kg/°C)
PROPANE
Liquid at 15°C: 2.512
BUTANE
Liquid at 15°C: 2.386
Latent heat of vapourisation (MJ/m3)
PROPANE
Liquid at 15°C: 232
BUTANE
Liquid at 15°C: 239
(MJ/kg = GJ/t)
PROPANE
Liquid at 15°C: 0.358
BUTANE
Liquid at 15°C: 0.372

Heat combustion (MJ/m³)
PROPANE
Liquid at 15°C: 25000
Gas at 101 kPa & 15°C: 93.3
BUTANE
Liquid at 15°C: 28800
Gas at 101 kPa & 15°C: 121.9
(MJ/kg = GJ/t)
PROPANE
Liquid at 15°C: 50.1
Gas at 101 kPa & 15°C: 50.1
BUTANE
Liquid at 15°C: 49.47
Gas at 101 kPa & 15°C: 49.47
Volume of air (m³) needed to burn 1m³ of gas:
PROPANE
Gas at 101 kPa & 15°C: 23.7
BUTANE
Gas at 101 kPa & 15°C: 31.0
Max. flame temp.:
PROPANE
Gas at 101 kPa & 15°C: 1970°C
BUTANE
Gas at 101 kPa & 15°C: 1990°C
LPG UN 1075
Propane UN 1978
Butane UN 1011
IsoButane 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

Reactivity
Extremely flammable.
Reacts violently with oxidising agents.

Chemical Stability
Stable under recommended conditions of storage.

Conditions to Avoid
Avoid heat, sparks, open flames and other ignition sources.

Incompatible materials
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.

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

11. TOXICOLOGICAL INFORMATION

Toxicology Information
Acute toxicity: Non toxic.

Skin corrosion/irritation
Non irritating. Contact with evaporating liquid or super-cold vessels or pipes may result in frost-bite with severe tissue injury.

Serious eye damage/irritation
Non irritating. Direct contact with evaporating liquid may result in severe cold burns with possible permanent tissue damage.

Respiratory sensitisation
Not classified as causing skin or respiratory sensitisation.

Skin Sensitisation
Not classified as causing skin or respiratory sensitisation.

Germ cell mutagenicity
Not classified as a mutagen.

Carcinogenicity
Not classified as a carcinogen.

Reproductive Toxicity
Not classified as a reproductive toxin.

STOT-single exposure
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.

STOT-repeated exposure
Not classified as causing organ effects from repeated exposure.

Aspiration Hazard
Not classified as an aspiration hazard.

12. ECOLOGICAL INFORMATION

Ecotoxicity
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.

Persistence and degradability
Unlikely to cause long term adverse effects in the environment.

Mobility
Spillages are unlikely to penetrate the soil.
The product is likely to volatise rapidly into the air.

Bioaccumulative Potential
This material is not expected to bio-accumulate.

Other Information
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.
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' tanks or cylinders can sometimes retain residue (LPG liquid and / vapour) and can be dangerous.
DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL OR GRIND ANY CYLINDER OR TANK.
DO NOT EXPOSE ANY CYLINDER OR TANK TO HEAT, FLAME, SPARKS AND OTHER SOURCES OF IGNITION.
IGNITION OF LIQUID OR VAPOURS, INCLUDING RESIDUES, MAY CAUSE A FLASH OR EXPLOSION, RESULTING IN INJURY OR DEATH AND PROPERTY DAMAGE.

14. TRANSPORT INFORMATION

U.N. Number
1075

UN proper shipping name
PETROLEUM GASES, LIQUEFIED

Transport hazard class(es)
2.1

Hazchem Code
2YE

IERG Number
04

Special Precautions for User
Do not transport with dangerous goods of Class 1, 3, 4, 5 and 7. Refer to ADG Code for detailed and specific restrictions.

Environmental Hazards
No

Other Information
UN Number: 1075
Proper Shipping Name: PETROLEUM GASES, LIQUEFIED
Transport Hazard Class: 2.1
Packing Group: None Allocated
Subsidiary Risk(s): None Allocated
Additional information: Transport of LPG is controlled in accordance with the requirements of the ADG Code and the National Transport Commission Load Restraint Guide.

15. REGULATORY INFORMATION

Regulatory information
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).

Poisons Schedule
Not Scheduled

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

16. OTHER INFORMATION

Empirical Formula & Structural Formula
PROPANE
C3H8
BUTANE
C4H10

Revisions Highlighted
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.
3. January 2019 - auto-ignition temperatures and response to LPG leaks updated

Other Information

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
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END OF SDS