


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

<b>Product Name</b>	Bulk LPG
<b>Proper Shipping Name</b>	Petroleum Gases, Liquefied
<b>Other Names</b>	LP Gas, Liquefied petroleum gas, Propane, Commercial Propane for Heating, Dual Purpose Propane, Butane, Commercial Butane for Heating.
<b>Recommended Use</b>	Fuel for commercial and, industrial applications.
<b>Supplier Name</b>	Wesfarmers Kleenheat Gas Pty Ltd (ABN 40 008 679 543)
<b>Address</b>	Building 161, Car Park 12, Murdoch University Murdoch, WA, 6150
<b>Telephone No.</b>	132 180
<b>Website</b>	www.kleenheat.com.au
<b>Australian Emergency Contact No.</b>	1800 093 336 (24 hours, 7 days)

**2. HAZARDS IDENTIFICATION**

<b>GHS Classification</b>
<b>Physical Hazards</b> Flammable Gas – Category 1A Liquefied Gas (Low Pressure)
 <p>Flame      Gas Cylinder</p>
<b>Signal Word - DANGER</b>
<b>Hazard Statements</b> H220 Extremely flammable gas H280 Contains gas under pressure; may explode if heated
<b>Precautionary Statements</b> <b>Prevention</b> P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P280 Contains gas under pressure; may explode if heated <b>Response</b> P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely. P381 In case of leakage, eliminate all ignition sources. <b>Storage</b> P403 Store in well-ventilated place. P410 Protect from sunlight.
<b>Other Hazards</b> Deliberately concentrating and inhaling can be harmful or fatal.

### 3. COMPOSITION AND INFORMATION ON INGREDIENTS

LPG is a mixture of hydrocarbons predominantly in the range C2 to C4 the proportion of which is variable depending on the actual product supplied.

Products supplied by Kleenheat Gas under the name LPG may be either Propane or Butane depending on the application. Due to the difference in combustion properties these products are not interchangeable and require equipment specific to the fuel type.

The composition ranges below attempt to cover product available in Australia meeting requirements for commercial Propane and Butane as listed in AS 4670-2006; Australian Standard for Commercial propane and butane for heating purposes.

Ethyl Mercaptan is added as an odourant to assist with leak detection; it has a distinctive “rotten eggs” smell.

Do not rely solely on the smell for detection of leaks; check all connections with soapy water.

Chemical Identity of Ingredient	PROPANE Proportion (Mole %)	BUTANE Proportion (Mole %)	CAS Number
Ethane	0.5 – 5 %	Small amount possible	74-84-0
Propane	40 – 98 %	< 20 %*	74-98-6
Propene (Propylene)	60%		115-07-1
Iso-butane, n-butane (and Butenes)	< 7.2 %	80 - 98 %	75-28-5, 106-97-8
Iso-Pentane, n-pentane (and heavier)	< 0.3 %	< 2.0 %	78-78-4, 109-66-0
1,3-butadiene	< 0.1 %	< 0.1 %	106-99-0
Ethyl mercaptan	25 – 50 ppm	25 – 50 ppm	75-08-1

\* The amount of propane allowable in Commercial Butane is not specified directly but the vapour pressure specification limits how much can be present.

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## 4. FIRST AID MEASURES

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### Inhalation

Move patient to fresh air.

Administer high flow oxygen and assist ventilation as required.

If difficulty breathing persists or oxygen has been administered, seek medical attention.

### Skin Contact

Cryogenic burns and Frostbite - Minor Injuries:

Ensure that clothing around the affected area is loose and does not restrict blood flow.

Do not attempt to remove clothing which has frozen onto the skin until flushing has allowed it to thaw completely. (Do not remove clothing if it remains adherent.)

Gently flush or immerse the affected areas with lukewarm water (30°C) for at least 15 minutes or longer as required for skin colour to change from waxy white / pale yellow through blue to pink or red.

Apply non-stick sterile dressing and treat as for a thermal burn.

DO NOT use hot water or apply any form of direct heat.

DO NOT RUB.

Seek immediate medical attention if clothing is adherent, if the burn is large, blistered or deep or if tissue freezing or frostbite has occurred.

Cryogenic burns and Frostbite - Major Injuries:

Send for Ambulance.

Follow minor injury procedure as far as possible.

Manage for shock.

**Ingestion** Due to product form and application, ingestion is considered extremely unlikely.

### Symptoms caused by exposure

Direct contact with eyes or skin may cause severe frost-bite.

Intentionally concentrating and inhaling Propane or Butane may cause unconsciousness and death.

Symptoms of exposure are directly related to displacement of oxygen from air.

As the amount of oxygen inhaled is reduced from 21 - 14% volume, the pulse rate will accelerate and the rate and volume of breathing will increase. The ability to maintain attention and think clearly is diminished, muscular co-ordination is somewhat disturbed.

As oxygen decreases from 14 - 10% volume, judgement becomes faulty, severe injuries may cause no pain. Muscular effort will lead to rapid fatigue.

Further reduction to 6% may cause nausea and vomiting. Ability to move may be lost. Permanent brain damage may result even after resuscitation from exposure to this low level of oxygen.

Below 6% breathing is in gasps and convulsions may occur.

Inhalation of a mixture containing no oxygen may result in unconsciousness from the first breath and death will follow in minutes.

### Medical attention and special treatment

Treatment is symptomatic and supportive.

Severe inhalation over exposure may sensitise the heart to catecholamine induced arrhythmias.

Do not administer catecholamines to an overexposed person.

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## 5. FIREFIGHTING MEASURES

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### Suitable extinguishing equipment

For small fires only – use dry chemical extinguisher.

For larger fires – Do not attempt to extinguish but stop gas flow at the source if safe to do so and allow to burn out. Evacuate area and contact emergency services.

Water may be used to assist with cooling of cylinders.

Caution – Do not use water near electrical items.

### Specific hazards

Extremely flammable.

Heating to decomposition produces acrid smoke and irritating fumes.

May also evolve carbon oxides when heated to decomposition.

Product will add fuel to a fire.

Temperatures in a fire may cause pressure relief devices to be activated and cylinders to rupture.

Excessive heating of pressurised containers may result in boiling liquid expanding vapour explosion (BLEVE). Timeframes of BLEVE are dependent upon the specific situation. BLEVE may occur within a relatively short timeframe

### Special protective equipment and precautions for fire fighters

Evacuate area and contact emergency services.

Propane and Butane vapour are heavier than air and may collect in low lying areas and travel downwind and/or downhill to remote sources of ignition.

The explosive zone may extend beyond the limits of the visible vapour cloud.

Vapour may collect in any confined space.

Remain upwind and notify those downwind of hazard.

Breathing apparatus is required in confined spaces.

Do not approach vessels suspected of being hot.

Use water mist to cool all intact containers and nearby storage areas.

Immediately withdraw from fire area if vessel venting noise begins to cycle or the container becomes distorted.

Pressure relief valves from exposed cylinders may operate which will increase fire in localised areas.

### Hazchem Code

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## 6. ACCIDENTAL RELEASE MEASURES

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### Personal precautions, protective equipment and emergency procedures

Wear long sleeves and trousers made of non-static producing fibres and safety glasses. Wear liquid impervious, thermally insulating gloves if contact with liquid is a possibility.

Propane and Butane will both ignite easily under all normal Australian weather conditions.

Any spillage or leak creates a severe fire and/or explosion hazard.

Liquid leaks generate large volumes of flammable vapour which is heavier than air and may collect in low lying areas and travel downwind and/or downhill to remote sources of ignition.

The explosive zone may extend beyond the limits of the visible vapour cloud.

Vapour may collect in any confined space.

If a leak has not ignited:

- Evacuate the area of all unnecessary personnel
- Eliminate all sources of ignition.
- Stop the gas flow at the source if safe to do so.
- Do not enter a vapour cloud except for rescue; self-contained breathing apparatus must be worn.
- Under the direction of properly trained personnel, use water spray to disperse the vapour and to protect personnel attempting to stop the leakage.

### Environmental precautions

Propane and Butane will both evaporate readily on release.

Neither is likely to contaminate soil or waterways.

### Methods and materials for containment and cleaning up

Isolate immediate area from pedestrian and vehicle traffic.

Eliminate other sources of ignition.

Monitor visible vapour cloud.

Consider alerting personnel downwind of hazard to evacuate and eliminate sources of ignition.

### In case of leaking cylinder:

(45 kg or smaller), contact supplier on 1800 093 336.

Approach from upwind. Close valve if possible.

Place cylinder in well-ventilated area away from ignition sources.

### In case of leaks from bulk storage:

Contact emergency services and supplier.

Approach from upwind.

Isolate and shut off fuel where possible.

Use water sprays to disperse vapours.

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## 7. HANDLING AND STORAGE

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### Precautions for safe handling

Eliminate all ignition sources including cigarettes, open flames, spark producing switches/tools, heaters, naked lights, pilot lights, and mobile phones.

Where appropriate ensure equipment is electrically bonded and earthed to prevent static accumulation.

Use safe work practices to avoid eye or skin contact with liquid or inhalation of vapours.

Do not rely upon the smell for detection of leaks. Check all connections using soapy water. Gas leaking from the connection will cause the detergent to bubble.

Liquid or gaseous propane or butane spilt on clothing may become trapped within the weave of the fabric and ignite if later exposed to an ignition source.

### Conditions for safe storage

In Western Australia storage must conform to the Dangerous Goods Safety Act 2004 and relevant Regulations under the Act.

Refer to local regulations for other states – see Section 15 Regulatory Information.

Store in a well-ventilated area away from oxidising agents (eg pool chlorine), acids, alkalis, direct sunlight, heat or ignition sources and protected from physical damage.

Store and use only in containers designed for use with this product.

Where relief valves are fitted to bulk vessels or pipework, protection by rain caps or grease plugs must be provided at all times.

Close valves when the product is not in use.

Check regularly for leaks.

Storage vessels must be properly labelled.

Do not remove warning labels from storage vessels.

Large storage areas should be bunded and have appropriate fire protection and ventilation systems.

## 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

### Exposure control measures

#### Workplace Exposure Standards

Name	CAS Number	TWA (ppm)	TWA (mg/ m <sup>3</sup> )	STEL (ppm)	STEL (mg/ m <sup>3</sup> )
LPG (liquefied petroleum)	68476-85-7	1000	1800	-	-
n-Butane	106-97-8	800	1900	-	-

### Engineering controls

Do not inhale vapours.

Use in well ventilated areas.

Maintain vapour levels below the recommended exposure standard; minimise or eliminate vapour exposure if possible.

Flammable/explosive vapours may accumulate in poorly ventilated areas; mechanical explosion proof extraction ventilation is recommended.

Do not enter storage tanks. If entry to tanks is necessary it is to be treated as a Confined Space Entry. Contact the supplier.

### Individual protection measures

#### Eye and face protection

Wear close fitting safety glasses with side protection.

Where contact with liquid is possible double eye protection such as safety glasses or goggles and a face shield should be considered.

#### Skin protection

Wear long sleeves and trousers or overalls made from specifically designed non static producing or natural fibres when handling Propane or Butane.

Wear liquid impervious, thermally insulating gloves when handling liquid. Aprons and gauntlets may also be appropriate in these situations.

Insulating gloves should also be worn where contact with pipework chilled by vaporising liquid is a possibility.

#### Respiratory protection

In the event that personnel are required to work in areas where the exposure standards are exceeded, supplied air respirators or self-contained breathing apparatus should be used. Ensure that personnel are suitably trained in the use of the equipment and that all manufacturers' instructions are adhered to.

The possibility of an explosive atmosphere should be considered when assessing the need for personnel to enter areas where respiratory protection is required.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance</b>	Clear, colourless liquid under pressure. Colourless gas at room temperature and pressure.	
<b>Odour</b>	Sulphurous smell due to addition of Ethyl Mercaptan	
<b>Odour threshold</b>	< 5000ppm (Detectible at 1/5 LEL by AS 4670-2006)	
<b>pH</b>	Not available	
<b>Freezing point</b>	Propane: < -180°C	Butane: -138 °C
<b>Boiling point</b>	Propane: - 45°C	Butane: 0°C
<b>Boiling range</b>	Propane: - 88°C to 0°C	Butane: -43°C to 36°C
<b>Flash point</b>	Propane: -156°C	Butane: -60°C
<b>Evaporation rate</b>	Not available	
<b>Flammability</b>	Extremely flammable	
<b>Upper explosive limit</b>	Propane: 9.8 vol% in air	Butane: 9.5 vol% in air
<b>Lower explosive limit</b>	Propane: 2.0 vol% in air	Butane: 1.5 vol% in air
<b>Vapour pressure</b>	Propane: 800 to 1530 kPa (gauge) @ 40°C Butane: 270 to 520 kPa (gauge) @ 40°C	
<b>Liquid Density</b>	Propane: 0.51 kg/l @ 15°C	Butane: 0.58 kg/l @ 15°C
<b>Vapour density</b>	Propane: 1.9 kg/m <sup>3</sup> @ 15°C	Butane: 2.5 kg/m <sup>3</sup> @ 15°C
<b>Relative vapour density</b>	Propane: 1.6 @ 15°C	Butane: 2.0 @ 15°C (both relative to air)
<b>Solubility</b>	low; < 100 mg/l in water High solubility in hydrocarbons, benzene and ethanol.	
<b>Partition coefficient: n-octanol/water</b>	Propane: log Kow = 2.36	Butane: log Kow =2.8
<b>Auto-ignition temperature</b>	Propane: 450°C	Butane: 287°C
<b>Decomposition temperature</b>	Not available	

## 10. STABILITY AND REACTIVITY

### Reactivity

Extremely flammable liquid and vapour.

Reacts violently with oxidising agents (eg. hypochlorites, peroxides).

### Chemical stability

Stable under recommended conditions of storage.

### Conditions to avoid

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

### Incompatible materials

All LPG is incompatible with oxidising agents (eg. hypochlorites, peroxides), acids (eg. sulphuric acid), strong alkalis (eg. hydroxides), heat and ignition sources.

Propane can damage and reduce the integrity of some plastics and rubbers. Confirm with the manufacturer that materials used in hoses and fittings are suitable for propane service.

### Decomposition Products

When heated to decomposition emits acrid smoke and irritating fumes.

May also evolve carbon oxides when heated to decomposition.



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## 11. TOXICOLOGICAL INFORMATION

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### Acute toxicity

Non-toxic – simple asphyxiant.

Effects are proportional to oxygen displacement.

No LD50 data available for main components of this product.

### Skin corrosion/irritation

Vapour is non-irritating.

Contact with liquid Propane, cold vessels or pipes containing low pressure liquid Propane, may result in cold burns or frost-bite with severe tissue damage. Butane has a boiling point of 0°C so will present a lower risk of cold burns.

### Serious eye damage/irritation

Vapour is non-irritating.

Contact with liquid may result in severe cold burns with possible permanent damage.

### Respiratory or skin sensitisation

Not known to cause sensitisation.

### Germ cell mutagenicity

Not expected to cause germ cell mutations.

Propane and Butane conforming to Australian Standard 4670 may contain trace amounts of 1,3-butadiene (<0.1%) which is a Category 1B Mutagen by the criteria of the Globally Harmonised System of classification. The amount potentially present falls below the threshold concentration of for classifying the mixture as mutagenic.

### Carcinogenicity

Not expected to cause cancer.

Propane conforming to Australian Standard 4670 may contain up to 60% propene (also known as propylene) which is listed by the International Agency for Research on Cancer (IARC) in Group 3 – Not classifiable as to its carcinogenicity to humans. Butane may contain minor amounts of propene.

Propane and Butane may also contain trace amounts of 1,3-butadiene (<0.1%) which is listed by the IARC in Group 1 – Carcinogenic to humans. The amount potentially present falls below the threshold concentration for classifying the mixture as carcinogenic.

The other components are not listed by the IARC.

### Reproductive toxicity

Not known to cause reproductive toxicity.

### Specific Target Organ Toxicity (STOT) – single exposure

Non-toxic – simple asphyxiant.

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.

### Specific Target Organ Toxicity (STOT) – repeated exposure

Non-toxic – simple asphyxiant.

### Aspiration hazard

Not an Aspiration Hazard.

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## 12. ECOLOGICAL INFORMATION

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### Ecotoxicity

No data available for ecotoxicity of Propane or Butane components.

### Persistence and degradability

All components of Propane and Butane are expected to be in the vapour phase at normal atmospheric conditions. They are degraded in the atmosphere by photochemically-produced hydroxyl radicals.

### Bioaccumulative potential

Propane and Butane will evaporate readily if released to the environment so are expected to have low bioaccumulation potential in an aquatic environment.

### Mobility in soil

Propane and Butane have moderate mobility in soil. They are both expected to evaporate from the soil with the final environmental fate being atmospheric.

### Other adverse effects

Propane and Butane may cause frost damage to vegetation.

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## 13. DISPOSAL CONSIDERATIONS

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### Disposal Methods

**WARNING!** - 'EMPTY' containers retain liquid and vapour residue and can be dangerous.

**DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE EMPTY CONTAINERS TO HEAT, FLAME, SPARKS AND OTHER SOURCES OF IGNITION, THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.**

Do not attempt to clean the internals of a storage vessel.

Unused product and storage vessels should be returned to the supplier when no longer required.

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## 14. TRANSPORT INFORMATION

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**UN number** 1075  
**Proper shipping name** PETROLEUM GASES, LIQUEFIED.  
**Transport hazard class** Class 2.1, Flammable gas  
**Packing Group** Not specified

### Environmental hazards for Transport Purposes

No Specific information. Refer to Section 6 in the event of a spill.

### Special Precautions for user

Do not transport with chemicals of class;

- 1 Explosives
- 3 Flammable liquids
- 4.1 Flammable solids
- 4.2 Spontaneously combustibles
- 4.3 Dangerous when wet
- 5.1 Oxidising agents
- 5.2 Organic Peroxides
- 7 Radioactives  
and foodstuffs.

### Additional Information

Transport of LPG is controlled in accordance with the requirements of the Australian Dangerous Goods Code.

It is forbidden to transport LPG on passenger aircraft.

See Section 15 for further information on transport legislation.

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## 15. REGULATORY INFORMATION

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### Safety, Health and Environment Regulations

Storage and Transport is subject to state based legislation:

Western Australia - Dangerous Goods Safety Act 2004 and relevant regulations under the Act.

Northern Territory - Dangerous Goods Act and the Transport of Dangerous Goods by Road and Rail (National Uniform Legislation) Act and relevant regulations under the Acts.

Liquefied Petroleum Gas is listed in the Australian Inventory of Chemical Substances under the Industrial Chemicals (Notification and Assessment) Act 1989 (Commonwealth) as a Hazardous Substance and also as a High Volume Industrial Chemical. All individual components for Propane and Butane are also listed.

## 16. OTHER INFORMATION

- To the best of our knowledge this document complies with the Code of Practice for the Preparation of Safety Data Sheets for Hazardous Chemicals, Safe Work Australia.
- This Safety Data Sheet summarises our best knowledge of the health and safety hazard information of the product and how to safely handle and use the product in the workplace.  
Each user should read this Safety Data Sheet and consider the information in the context of how the product will be handled and used in the workplace, including in conjunction with other products.
- If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact the Wesfarmers Chemicals, Energy and Fertilisers (WesCEF) Health, Safety and Environment Department by calling the switchboard on (08) 9312 9222 during normal business hours. In the event of an emergency please contact 1800 093 336.
- Kleenheat reserves the right to make change to safety data sheets without notice.

### References

Preparation of Safety Data Sheets for Hazardous Chemicals – Code of Practice, Safe Work Australia

<https://www.safeworkaustralia.gov.au/doc/model-code-practice-preparation-safety-data-sheets-hazardous-chemicals>

Globally Harmonized System of Classification and Labelling of Chemicals (GHS), 7th revised edition, United Nations, 2017, <https://unece.org/ghs-rev7-2017>

Hazardous Chemical Information System (HCIS), <http://hcis.safeworkaustralia.gov.au>

Hazardous Substances Data Bank (HSDB), <https://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB>

Australian Dangerous Goods Transport code – 7<sup>th</sup> Edition

### END OF SDS

Document Revision Table		
Version	Details	Publication Date
7.0	Updated to GHS 7	Jan 2023
6.0	Full Review	Jun 2018
5.0	Updated First Aid measures for skin contact	Mar 2017
4.0	Logo update only – no review of content	Jan 2016
3.0	Title changed in document profile to match that on the SDS document.	Jul 2013
2.0	Full review. Document renamed, reformatted and updated to 2011 Code of Practice and GHS.	Jul 2013
1.0	Initial release of document	Apr 2012