1. IDENTIFICATION

GHS Product Identifier
SHELL AUTOGAS

Company Name
VIVA ENERGY AUSTRALIA PTY LTD (FORMERLY: SHELL COMPANY OF AUSTRALIA LTD) (ABN 46 004 610 459)

Address
Level 16, 720 Bourke Street Docklands
Victoria 3008 Australia

Telephone/Fax Number
Tel: +61 (0)3 8823 4444
Fax: +61 (0)3 8823 4800

Emergency phone number
1800 651 818 (Australia) / Poisons Information Centre: 13 11 26 (Australia)

Recommended use of the chemical and restrictions on use
As fuel in domestic, commercial, industrial and automotive applications.

Other Names

<table>
<thead>
<tr>
<th>Name</th>
<th>Product Code</th>
</tr>
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<tbody>
<tr>
<td>AUTOGAS</td>
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</table>

2. HAZARD IDENTIFICATION

GHS classification of the substance/mixture
Classified as Hazardous according to the Globally Harmonised System of Classification and Labelling of Chemicals (GHS) including Work, Health and Safety Regulations, Australia.
Classified as Dangerous Goods according to the Australian Code for the Transport of Dangerous Goods by Road and Rail. (7th edition)
Flammable Gases: Category 1
Gases under Pressure: Compressed 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
P403 Store in a well-ventilated place.
P410+P403 Protect from sunlight. Store in a well-ventilated place.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butane (Mixture of Isomers)</td>
<td>106-97-8</td>
<td>50-98 %</td>
</tr>
<tr>
<td>Butene (Mixture of Isomers)</td>
<td>106-98-9</td>
<td>0-40 %</td>
</tr>
<tr>
<td>Propane</td>
<td>74-98-6</td>
<td>0-2 %</td>
</tr>
<tr>
<td>Propene</td>
<td>115-07-1</td>
<td>0-2 %</td>
</tr>
<tr>
<td>Ethyl Mercaptan (Odorant)</td>
<td>75-08-1</td>
<td>0.0025</td>
</tr>
</tbody>
</table>

4. FIRST-AID MEASURES

Inhalation
Avoid becoming a casualty - to protect rescuer, use air-viva, oxy-viva or one-way mask. Remove affected person from contaminated area - Apply artificial respiration if not breathing. Do not give direct mouth to mouth resuscitation. Resuscitate in a well ventilated area. Seek IMMEDIATE medical attention. Note: in confined space - DO NOT ATTEMPT RESCUE WITHOUT ADEQUATE RESPIRATORY PROTECTION.

Ingestion
Not considered a potential route of exposure.

Skin
Remove all contaminated clothing immediately. Clothing frozen to the skin should be thawed before being removed. Wash affected area thoroughly with soap and water. For Frostbite: Flush affected areas with lukewarm water. Do not use hot water. Treat as thermal burns. Seek IMMEDIATE medical attention.

Eye contact
If eye tissue is frozen, seek IMMEDIATE medical attention. If tissue is not frozen, immediately irrigate with copious amounts of water for at least 15 minutes. Remove contact lenses. Eyelids to be held open. Seek medical attention.

First Aid Facilities
Eyewash and normal washroom facilities.

Advice to Doctor
Contact with liquefied gas may lead to frostbite of the exposed part. Frozen tissues may appear waxy and mottled blue. Clothing should be removed gently, if possible, to avoid further damage to skin. Local rewarming in water at no more than 40°C should be undertaken until completely rewarmed. Analgesia may be required.

Other Information
For advice in an emergency, contact a Poisons Information Centre (Phone Australia 131 126) or a doctor at once.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Use carbon dioxide, dry chemical, and foam or water mist.

Unsuitable Extinguishing Media
Do not use water jet.

Hazards from Combustion Products
Under fire conditions this product may emit toxic and/or irritating fumes and gases including carbon dioxide, water vapour, traces of carbon monoxide and nitrogen oxides.

Specific Hazards Arising From The Chemical
Extremely flammable gas. Explosive gas-air vapour mixtures may form. Flashback along the vapour trail may occur. Keep away from heat, naked flames, and sparks. Cylinders may explode when heated or may become a projectile in a fire.
6. ACCIDENTAL RELEASE MEASURES

Emergency Procedures
Remove all sources of ignition. Increase ventilation. Evacuate all unprotected personnel. Use self-contained breathing apparatus (S.C.B.A) and full protective clothing to minimise exposure. Allow gas to vent safely to atmosphere, preferably in well-ventilated, remote location. Monitor oxygen concentration in confined spaces. Check for leaks using pressure drop test or soapy water on joints and outlets. Shut cylinder valve to stop leak if possible and safe to do so. Check gas concentration to ensure area is safe before removing protective equipment. Damaged gas cylinders should be returned to the supplier.

7. HANDLING AND STORAGE

Precautions for Safe Handling
Use in a well-ventilated area. Use away from all sources of heat and ignition. Avoid skin and eye contact and breathing of gas. Post 'NO SMOKING' signs in area of use. Avoid release of gas into workplace air. Have emergency equipment (for fires, leaks, spills, etc.) readily available. Wear appropriate personal protective equipment and clothing to prevent exposure. Use smallest possible amounts in designated areas with adequate ventilation. Maintain high standards of personal hygiene i.e. washing hands prior to eating, drinking, smoking or using toilet facilities. DO NOT enter confined spaces where gas may have collected. Suck back of water into the container must be prevented. Do not allow back feed into the container. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt. Refer to supplier's container handling instructions.

Conditions for safe storage, including any incompatibilities
Cylinders shall be stored in a cool, dry, well-ventilated area out of direct sunlight and away from heat and ignition sources. Outside or detached storage is preferred. No part of cylinders shall be exposed to temperatures above 50 °C. Cylinders shall be stored upright on a level, fireproof floor, secure in position and protected from damage. Full cylinders shall be stored separately from empty ones. Keep cylinder valve cover on. Label empty cylinders and store full cylinders separately from empty ones. Consider leak detection and alarm systems, as required. Limit quantity in storage. Restrict access to storage area and post warning signs. Inspect periodically for deficiencies such as damage or leaks. Have fire extinguishers available in and near the storage area. Ensure that storage conditions comply with applicable local and national regulations.
For information on the design of the storeroom, reference should be made to AS 4332 The storage and handling of gases in cylinders.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limit values
No exposure value assigned for this specific material by the National Occupational Health and Safety Commission (NOHSC), Australia. However, the available exposure limits for ingredients are listed below:

Butane
TWA: 800 ppm
TWA: 1900 mg/m³

TWA (Time Weighted Average): The average airborne concentration of a particular substance when calculated over a normal eight-hour working day, for a five-day week.

Biological Limit Values
No biological limits allocated.

Appropriate Engineering Controls
Use with good general ventilation. If mists or vapours are produced, local exhaust ventilation should be used. Before entering a confined space where Butane and Propane are present, check to make sure sufficient Oxygen (19.5%) exists. Refer to relevant regulations for further information concerning ventilation requirements. Refer to AS 2865 Australian Standard Safe working in a confined space, for further information concerning ventilation requirements.
Respiratory Protection
If engineering controls are not effective in controlling airborne exposure then an approved respirator with a replaceable filter should be used. Refer to relevant regulations for further information concerning respiratory protective requirements. Reference should be made to Australian Standards AS/NZS 1715, Selection, Use and Maintenance of Respiratory Protective Devices; and AS/NZS 1716, Respiratory Protective Devices, in order to make any necessary changes for individual circumstances.

Eye Protection
Safety glasses with side shields, chemical goggles or full-face shield as appropriate should be used. Final choice of appropriate eye/face protection will vary according to individual circumstances. Eye protection devices should conform to relevant regulations. Eye protection should conform with Australian/New Zealand Standard AS/NZS 1715 - Selection, Use and Maintenance of Respiratory Protective Devices; and AS/NZS 1716, Respiratory Protective Devices, in order to make any necessary changes for individual circumstances.

Hand Protection
Wear gloves of impervious material. Final choice of appropriate gloves will vary according to individual circumstances i.e. methods of handling or according to risk assessments undertaken. Occupational protective gloves should conform to relevant regulations. Reference should be made to AS/NZS 2161.1: Occupational protective gloves - Selection, use and maintenance.

Body Protection
Suitable protective workwear, e.g. cotton overalls buttoned at neck and wrist is recommended. Chemical resistant apron is recommended where large quantities are handled.

Other Information
Butane and Propane are asphyxiant gases which when present in an atmosphere in high concentration, lead to reduction of oxygen concentration by displacement or dilution. It is not appropriate to recommend an exposure standard for an asphyxiant, rather it should be required that a sufficient oxygen concentration be maintained.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form
Gas

Appearance
Colourless, odourless gas supplied in compressed liquid form in a pressure container.

Colour
Colourless

Odour
Odourless, a strong and distinctive odour is added to assist in the early detection of even minor leaks.

Decomposition Temperature
Not available

Melting Point
Not available

Boiling Point
0°C

Solubility in Water
< 200ppm (at 20°C)

Specific Gravity
Liquid 0.58 (water=1)
Gas 2.01 (air = 1)

pH
Not available

Vapour Pressure
520 kPa Max (at 40°C)

Vapour Density (Air=1)
Not available

Evaporation Rate
Not available

Odour Threshold
Not available

Volatile Component
Not available

Density
Not available

Flash Point
-60°C

**Flammability**
Extremely flammable

**Auto-Ignition Temperature**
482°C to 538°C

**Flammable Limits - Lower**
1.8% in air (v/v)

**Flammable Limits - Upper**
8.6% in air (v/v)

### 10. STABILITY AND REACTIVITY

**Chemical Stability**
Stable under normal conditions of storage and handling.

**Reactivity and Stability**
Reacts with incompatible materials.

**Conditions to Avoid**
Heat, open flames and other sources of ignition.

**Incompatible materials**
Can react violently with oxidising agents - chlorine, pool chlorine or nitric acid.

**Hazardous Decomposition Products**
Thermal decomposition may result in the release of toxic and/or irritating fumes, smoke and gases including: carbon dioxide and carbon monoxide.

**Possibility of hazardous reactions**
Not available

**Hazardous Polymerization**
Not available

### 11. TOXICOLOGICAL INFORMATION

**Toxicology Information**
No toxicity data available for this product.

**Ingestion**
Not a likely source of exposure, however, liquid may cause freeze burns to mouth and throat.

**Inhalation**
Inhalation of product vapours may cause irritation of the nose, throat and respiratory system. Butane and Propane are asphyxiant gases which when present in an atmosphere in high concentration, leads to reduction of oxygen concentration by displacement or dilution. Symptoms include decreased visual acuity, decreased coordination and judgment, headache, dizziness, confusion, drowsiness, fatigue, shortness of breath, muscular weakness, convulsions, unconsciousness, coma and eventually death.

**Skin**
May be irritating to skin. The symptoms may include redness, itching and swelling. May cause frostbite injuries to skin due to uncontrolled release of compressed gas resulting in redness, tissue destruction.

**Eye**
May be irritating to eyes. The symptoms may include redness, itching and tearing. May cause frostbite injuries to eyes due to uncontrolled release of compressed gas resulting in stinging, tearing, blurred vision and possibly permanent damage to eyes.

**Respiratory sensitisation**
Not expected to be a respiratory sensitiser.

**Skin Sensitisation**
Not expected to be a skin sensitiser.

**Germ cell mutagenicity**
Not considered to be a mutagenic hazard.

**Carcinogenicity**
Not considered to be a carcinogenic hazard.

**Reproductive Toxicity**
Not considered to be toxic to reproduction.
STOT-single exposure
Not expected to cause toxicity to a specific target organ.

STOT-repeated exposure
Not expected to cause toxicity to a specific target organ.

Aspiration Hazard
Not expected to be an aspiration hazard.

Other Information
This material contains asphyxiating gas, which when present in an atmosphere in high concentrations, lead to a reduction of oxygen concentration by displacement or dilution. It is not appropriate to recommend an exposure standard for each simple asphyxiating gas; rather it should be required that a sufficient oxygen concentration be maintained. The minimum oxygen content in air should be 19.5 per cent by volume under normal atmospheric pressure. Unconsciousness and death can rapidly ensue in an environment, which is deficient in oxygen.

12. ECOLOGICAL INFORMATION

Ecotoxicity
No ecological data available for this material.

Liquid Butane will vapourise rapidly when released to atmosphere. Commercial Butane consists of hydrocarbons that photochemically decompose under atmospheric conditions.

Persistence and degradability
Not available

Mobility
Not available

Bioaccumulative Potential
Not available

Other Adverse Effects
Not available

Environmental Protection
Prevent this material entering waterways, drains and sewers.

13. DISPOSAL CONSIDERATIONS

Disposal considerations
Dispose of waste according to applicable local and national regulations. 'Empty' containers retain residue (liquid and/or vapour) and can be dangerous. Do not attempt to clean since residue is difficult to remove. 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. All containers should be returned to the supplier. Privately owned containers no longer required, should be disposed of in an environmentally safe manner, and in accordance with applicable regulations.

14. TRANSPORT INFORMATION

Transport Information
Road and Rail Transport (ADG Code):
This material is classified as a Division 2.1 Flammable Gases Dangerous Goods
Division 2.1 Dangerous Goods are incompatible in a placard load with any of the following:
- Class 1, Explosives
- Division 2.2 Non-flammable, Non toxic gas that have a subsidiary risk 5.1 except when all are packed in cylinders or pressure drums not exceeding 500L capacity.
- Class 3, Flammable Liquids, if both the Division 2.1 and Class 3 dangerous goods are in tanks or other receptacles with a capacity individually exceeding 500L.
- Division 4.1, Flammable Solids
- Division 4.2, Spontaneously Combustible Substances
- Division 4.3, Dangerous When Wet Substances
- Division 5.1, Oxidising Agents
- Division 5.2, Organic Peroxides
- Class 7, Radioactive Substances
Marine Transport (IMO/IMDG):
Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea.
Class/Division: 2.1
UN No: 1011
Proper Shipping Name: BUTANE
EMS : F-D, S-U

Air Transport (ICAO/IATA):
Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air.
Class/Division: 2.1
UN No: 1011
Proper Shipping Name: Butane
Packaging Instructions (passenger & cargo): Forbidden
Packaging Instructions (cargo only): 200
Hazard Label: Flammable gas
Special Provisions: A1

U.N. Number
1011

UN proper shipping name
BUTANE

Transport hazard class(es)
2.1

Hazchem Code
2YE

IERG Number
04

IMDG Marine pollutant
No

Transport in Bulk
Not available

Special Precautions for User
Not available

15. REGULATORY INFORMATION

Regulatory information
Classified as Hazardous according to the Globally Harmonised System of classification and labelling of chemicals (GHS) including Work, Health and Safety regulations, Australia.

Not classified as a Scheduled Poison according to the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP)

Poisons Schedule
Not Scheduled

16. OTHER INFORMATION

Date of preparation or last revision of SDS
SDS Reviewed: July 2016
Supersedes: April 2015

References
- Preparation of Safety Data Sheets for Hazardous Chemicals Code of Practice.

- Standard for the Uniform Scheduling of Medicines and Poisons.

- Australian Code for the Transport of Dangerous Goods by Road & Rail.

- Workplace exposure standards for airborne contaminants, Safe Work Australia.

- American Conference of Industrial Hygienists (ACGIH).

- Globally Harmonised System of classification and labelling of chemicals.