AUSTRALIAN EMERGENCY NUMBER: 1800 093 336

WESTERN AUSTRALIA
Campus Drive (off Murdoch Drive), MURDOCH, WA 6150
Tel: (08) 9312 9333 Fax: (08) 9312 9833

NEW SOUTH WALES
Site 11 – 6 Grand Avenue, CAMELLIA, NSW 2142
Tel: (02) 8846 1800 Fax: (02) 9638 5534

VICTORIA
333 Keilor Road, NIDDRIE, VIC 3042
Tel: (03) 9375 8888 Fax: 1300 650 687

QUEENSLAND
305 Tingira Street, PINKENBA QLD 4008
Tel: (07) 3260 1115 Fax: (07) 3260 1231

SOUTH AUSTRALIA
30 Waldaree Road, GEPPS CROSS SA 5094
Tel: (08) 8262 5411 Fax: (08) 8359 4331

NORTHERN TERRITORY
1769 Winnellie Road, WINNELLIE NT 0820
Tel: (08) 8984 0000 Fax: (08) 8984 0084

TASMANIA
333 Keilor Road, NIDDRIE, VIC 3042
Tel: (03) 9375 8888 Fax: 1300 650 687

MATERIAL SAFETY DATA SHEET

Liquefied Natural Gas

1. IDENTIFICATION OF SUBSTANCE AND COMPANY

Product Name	Liquefied Natural Gas
Product Use	
Company Name	Wesfarmers Kleenheat Gas Pty Ltd (ABN 40 008 679 543)
Address	Campus Drive (off Murdoch Drive) Murdoch, Western Australia, 6150
Telephone	132 180
Fax	08 9312 9833
Emergency No	1800 093 336

2. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient Name	CAS Number	OSHA PEL	ACGIH TLV	ACGIH (STEL)	Concentration (% by weight)
Methane	74-82-8	N/A*	N/A*	N/A*	85 – 90
Ethane	74-84-0	N/A*	N/A*	N/A*	4 – 5
Carbon Dioxide	124-38-9	5000 ppm	5000 ppm	30,000 ppm	1 – 5

* None established by OSHA or ACGIH.

A complex mixture of light gases separated from raw natural gas consisting of aliphatic hydrocarbons having carbon numbers in the range of C1 through C4 predominately methane (C1) and ethane (C2). May be odourised after vapourisation with trace of odourant (typically well below 0.1% t – butyl mercaptan).

EMERGENCY OVERVIEW
DANGER!

EXTREMELY FLAMMABLE GAS-MAY CAUSE FLASH FIRE OR EXPLOSION IN HIGH CONCENTRATIONS

High concentrations may exclude oxygen and cause dizziness and suffocation. Contact with liquid or cold vapour may cause frostbite or freeze.

3. HAZARDS IDENTIFICATION

PRIMARY ROUTES OF ENTRY:
Eyes: NO **Skin:** NO **Inhalation:** YES **Ingestion:** NO
Eyes
Vapours are not irritating. However, contact with liquid or cold vapour may cause frostbite, freeze burns and permanent eye damage.

Skin
Vapours are not irritating. Direct contact to the skin or mucous membrane with liquefied product or cold vapour may cause freeze burns and frostbite. Signs of frostbite include a change in the colour of skin to grey or white, possibly followed by blistering. Skin may become inflamed and painful.

Ingestion
Ingestion is unlikely. Contact of the mucous membranes with liquefied product may cause frostbite or freeze burns.

Inhalation
This product is considered to be non-toxic by inhalation. Inhalation of high concentrations may cause central nervous system depression such as dizziness, drowsiness, headache, and similar narcotic symptoms but no long term effects. Numbness, a "chilly" feeling and vomiting have been reported from accidental exposure to high concentrations.

This product is a simple asphyxiant. In high concentrations, it will displace oxygen from the breathing atmosphere, particularly in confined spaces. Signs of asphyxiation will be noticed when oxygen is reduced to below 16% and may occur in several stages. Symptoms may include rapid breathing and pulse rate, headache, dizziness, visual disturbances, mental confusion, incoordination, mood changes, muscular weakness, tremors, cyanosis, narcosis and numbness of the extremities. Unconsciousness leading to central nervous system injury and possibly death will occur with inadequate oxygen levels, which may cause unconsciousness, suffocation and death.
Warning: *The burning of any hydrocarbon as a fuel in an area without ventilation may result in hazardous level of combustion products, including carbon monoxide and inadequate oxygen levels, which may cause unconsciousness, suffocation and death.*

CHRONIC and CARCINOGENICITY
None expected – see Section 11

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE
Individuals with pre-existing conditions of the heart, lungs and blood may have increased susceptibility to symptoms of asphyxia.

4. FIRST AID MEASURES

Eye
In case of frostbite or freeze burns, gently soak the eyes with cool to lukewarm water. DO NOT WASH THE EYES WITH HOT WATER (i.e. over 40^{o}C). Open eyelids wide to allow liquid to evaporate. If the person cannot tolerate light, protect the eyes with a bandage or handkerchief. Do not introduce into the eyes without medical advice. Seek immediate medical treatment.

Skin
Remove contaminated clothing and flush affected area with cool to lukewarm water. Rewarming the exposed area may be performed, however DO NOT USE HOT WATER. Seek immediate attention if blistering, tissue freezing or frostbite has occurred.

Inhalation
Remove person to fresh air. If the person is not breathing, give artificial respiration. If breathing is difficult, give oxygen. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.

Ingestion
DO NOT INDUCE VOMITTING BECAUSE OF DANGER BREATHING LIQUID INTO LUNGS. Seek immediate medical attention. Rinse mouth with water. Administer 1 to 2 glasses of water or milk to drink. Never administer to an unconscious person.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES:
Flashpoint Method
Extremely Flammable gas
Auto ignition Point
482-632ºC
OSHA/NFPA Flammability Class
Flammable gas
Lower Explosive Limit (%)
5
Upper Explosive Limit (%)
15
Fire and Explosion Hazards
Liquid releases of flammable vapours at well below ambient temperatures readily form a flammable mixture with air. Dangerous fire and explosion hazard when exposed to heat, sparks, or flame. Vapours are initially heavier than air and may travel short distances to a point of ignition or flashback. As the vapour warms above minus 88^{o}C it becomes lighter than air. Runoff to sewer may cause fire or explosion hazard.
Extinguishing Media
Dry chemical, carbon dioxide, halon, or water. Class C, B or A extinguisher, respectively. However, fire should not be extinguished unless flow of gas can be immediately stopped.
Fire Fighting Equipment Precautions
Gas fires should not be extinguished unless flow of gas can be immediately stopped. Shut off gas source and allow gas to burn out. If spill or leak has not ignited, determine if water spray may assist in dispersing gas or vapour to protect personnel attempting to stop the leak.
Use water to cool equipment, surfaces and containers exposed to fire and excessive heat. For large fire, the use of unmanned hose holders or monitor nozzles may be advantageous to further minimise personnel exposure.

Isolate the area, particularly around the ends of the storage vessel. Let vessel, tank car, or container burn unless leak can be stopped. Withdraw immediately in the event of a rising sound from the venting of a safety device. Large fires typically require NIOSH/MSHA approved pressure demand self contained breathing apparatus with full face-piece and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

ACTIVATE FACILITY SPILL CONTINGENCY PLAN (eg SPCC, RCRA, OPA or EMERGENCY PLAN).

Evacuate non-essential personnel and remove or secure all ignition sources. Consider wind direction; stay upwind and uphill, if possible to evaluate the direction of product travel. Vapour cloud may be white, but colour will dissipate as cloud disperses – fire and explosion hazard is still present!
Stop the source of the release, if safe to do so. Do not flush down sewer or drainage systems. Do not touch spilled liquid (frostbite or freeze burn hazard!).
Consider the use of water spray to disperse vapours. Isolate the area until gas has dispersed. Ventilate and gas test area before entering.

7. HANDLING AND STORAGE

Handling and Storage Precautions
Keep away from flame, sparks and excessive temperatures. Store only in approved containers. Bond and ground containers. Use only in well ventilated areas. See also applicable OSHA regulations for the handling of this product, including but not limited to 29 CFR 1910.110. Storage and Handling of Liquefied Petroleum Gases.

8. EXPOSURES CONTROLS, PERSONAL PROTECTION

Engineering Controls
Use adequate ventilation to keep vapour concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces. Use explosion proof equipment and lighting in classified/controlled areas.
Eye/Face Protection
Where there is a possibility of liquid contact, wear splash proof SAFETY goggles and face-shield.
Skin Protection
When contact with liquid may occur, wear apron, face-shield and cold impervious, insulating gloves.
Respiratory Protection
Use a NIOSH/MSHA approved positive pressure, supplied air respirator with escape bottle or self-contained breathing apparatus (SCBA) for gas concentrations above occupational exposure limits, for potential uncontrolled release, if exposure levels are not known, or in an oxygen deficient atmosphere.
Caution: Flammability limits (ie explosion hazard) should be considered when assessing the need to expose personnel to concentrations requiring respiratory protection selection.
Refer to OSHA 29 CFR 1910.134, ANSI Z88.2-1992, NIOSH Respirator Decision Logic and the manufacturer for additional guidance on respiratory protection selection.

9. PHYSICAL AND CHEMCIAL PROPERTIES

Appearance
A colourless gas. Cold vapour cloud may be white but the lack of visible gas cloud does not indicate absence of gas. A colourless liquid under pressure.
Odour
Odourless when pure, but may have a “natural gas” type odour when treated with odorising agent (usually t-butyl mercaptan). Typically, LNG is not odourised as the Mercaptan freezes.

Basic Physical Properties
Boiling Range
-162ºC
Vapour Pressure
40 atm. @ -86ºC
Vapour Density (air = 1)
0.6
Specific Gravity (H20 = 1)
0.4 @ 164ºC
Solubility (H20)
3.5%

10. STABILITY AND REACTIVITY

Stability
Stable.
Conditions to Avoid
Keep away from ignition sources and heat, high temperatures, open flames, sparks, welding, smoking, static electricity and other ignition sources.
Incompatible Materials
Keep away from strong oxidisers.
Hazardous Decomposition Products
Carbon monoxide, carbon dioxide and non-combustible hydrocarbons (smoke).
Hazardous Polymerisation
Will not occur.

11. TOXICOLOGICAL INFORMATION

Chronic Effects of Carcinogenicity
OSHA: No IARC: No NTP: No ACGIH: No

12. ECOLOGICAL INFORMATION

Liquid release is only expected to cause localised, non-persistent environmental damage, such as freezing. Biodegradation of this product may occur in soil and water. Volatilisation is expected to exist entirely in the vapour phase in ambient air.

13. DISPOSAL CONSIDERATIONS

Consult federal, state and local waste regulations to determine appropriate waste characterisation of material and allowable disposal methods.

14. TRANSPORT INFORMATION

Proper Shipping Name
Natural Gas Refrigerated Liquid
Hazard Class
2.1
DOT Identification Number
UN1972
DOT Shipping Label
Flammable Gas

Proper Shipping Name
Natural Gas Refrigeration Liquid (Cryogenic liquid with high methane content)
Hazard Class
2.1
DOT Identification Number
UN1972
DOT Shipping Label
Flammable Gas

15. REGULATORY INFORMATION

Refer to: AS 3961
NFPA 57