

AGL NATURAL GAS

Chemwatch Material Safety Data Sheet

Issue Date: 11-Apr-2008

NC317ECP

CHEMWATCH 65706

Version No:4

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Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

AGL NATURAL GAS

SYNONYMS

"high methane", "natural gas NG"

PROPER SHIPPING NAME

METHANE, COMPRESSED or NATURAL GAS, COMPRESSED

PRODUCT USE

Operators should be trained in correct use & maintenance of respirators. Commercial heating and cooking gas fuel, fuel for vehicles. Fractionated and used as base raw material for the manufacture of many chemicals ammonia, acetylene. etc.

SUPPLIER

Company: AGL Energy Limited

Address:

72 Christie St

Locked Bag 1837

St Leonards

St Leonards

NSW 2065

NSW 2065

AUS

Telephone: (02) 9921 2999

Emergency Tel: 000

Section 2 - HAZARDS IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE

DANGEROUS GOODS. NON-HAZARDOUS SUBSTANCE. According to the Criteria of the ADG Code and NOHSC.

POISONS SCHEDULE

None

RISK

Extremely flammable.

Risk of explosion if heated under confinement.

SAFETY

Keep away from sources of ignition. No smoking.

Do not breathe gas/ fumes/ vapour/ spray.

Wear eye/ face protection.

Use only in well ventilated areas.

Keep container in a well ventilated place.

Keep container tightly closed.

Take off immediately all contaminated clothing.

In case of contact with eyes rinse with plenty of water and contact Doctor or Poisons Information Centre.

This material and its container must be disposed of as hazardous waste.

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Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
natural gas, compressed	68410-63-9	100
comprising		
methane	74-82-8	88.5^
ethane	74-84-0	8^
propane	74-98-6	0.2^
butane	106-97-8.	trace^
pentane plus (C5+)		trace^
carbon dioxide	124-38-9	2^
nitrogen	7727-37-9.	1.3^

Section 4 - FIRST AID MEASURES

SWALLOWED

Refer to procedure for inhalation.

EYE

Not applicable.

SKIN

Not applicable.

INHALED

- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prosthesis such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
- Transport to hospital, or doctor.

NOTES TO PHYSICIAN

Treat symptomatically.

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

- Dry chemical powder.
- Carbon dioxide.
Bromochlorodifluoromethane (BCF) (where regulations permit).

FIRE FIGHTING

Alert Fire Brigade and tell them location and nature of hazard.

- May be violently or explosively reactive.
- Wear breathing apparatus plus protective gloves for fire only.
- May be washed to drain with large quantities of water.
- Consider evacuation (or protect in place).

Fight fire from a safe distance, with adequate cover.

If safe to do so, switch off electrical equipment until vapour fire hazard is removed.

DO NOT extinguish burning gas. If safe to do so, stop flow of gas.

DO NOT approach cylinders suspected to be hot.

If flow of gas cannot be stopped, leave gas to burn.

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Section 5 - FIRE FIGHTING MEASURES

If safe to do so, remove containers from path of fire.
Cool fire exposed containers with water spray from a protected location.
When any large container (including road and rail tankers) is involved in a fire, consider evacuation by 1500 metres in all directions.

FIRE/EXPLOSION HAZARD

Flammable gas.

Severe vapour explosion hazard, when exposed to flame or spark.

Dangerous hazard when exposed to heat or flame.

Vapour may travel a considerable distance to source of ignition.

Heating may cause expansion or decomposition leading to violent rupture of containers.

On combustion, emits toxic fumes of: carbon monoxide (CO) and carbon dioxide (CO₂).

FIRE INCOMPATIBILITY

- Explosion hazard may follow contact with incompatible materials.

Reacts violently with oxidizing agents such as chlorine.

Contact with chlorine dioxide causes spontaneous explosion.

Contact with liquid fluorine causes spontaneous explosion, even at very low temperatures (-19 deg.C).

A mixture of liquid methane and liquid oxygen is an explosive.

HAZCHEM: 2[S]E

Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

MINOR SPILLS

Refer to major spills.

MAJOR SPILLS

Alert Fire Brigade and tell them location and nature of hazard.

Clear area of personnel and move upwind.

Shut off all possible sources of ignition and increase ventilation.

- May be violently or explosively reactive.
- Wear breathing apparatus plus protective gloves.
- May be washed to drain with large quantities of water.
- Consider evacuation (or protect in place).

Apply leak detection solution to suspected sites in lines and equipment.

- Remove leaking cylinders to a safe place.
- Fit vent pipes. Release pressure under safe, controlled conditions
- Burn issuing gas at vent pipes.
- DO NOT exert excessive pressure on valve; DO NOT attempt to operate damaged valve.

PROTECTIVE ACTIONS FOR SPILL

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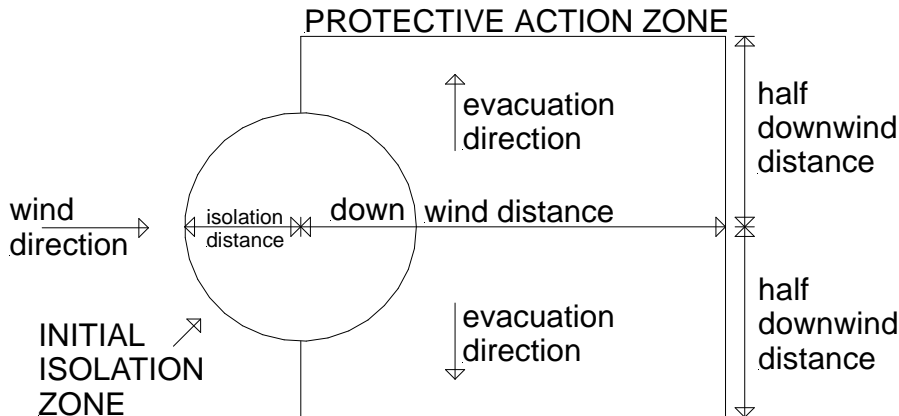
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Section 6 - ACCIDENTAL RELEASE MEASURES



From IERG (Canada/Australia)

Isolation Distance	100 metres
Downwind Protection Distance	800 metres
IERG Number	4

FOOTNOTES

- 1 PROTECTIVE ACTION ZONE is defined as the area in which people are at risk of harmful exposure. This zone assumes that random changes in wind direction confines the vapour plume to an area within 30 degrees on either side of the predominant wind direction, resulting in a crosswind protective action distance equal to the downwind protective action distance.
- 2 PROTECTIVE ACTIONS should be initiated to the extent possible, beginning with those closest to the spill and working away from the site in the downwind direction. Within the protective action zone a level of vapour concentration may exist resulting in nearly all unprotected persons becoming incapacitated and unable to take protective action and/or incurring serious or irreversible health effects.
- 3 INITIAL ISOLATION ZONE is determined as an area, including upwind of the incident, within which a high probability of localised wind reversal may expose nearly all persons without appropriate protection to life-threatening concentrations of the material.
- 4 SMALL SPILLS involve a leaking package of 200 litres (55 US gallons) or less, such as a drum (jerrican or box with inner containers). Larger packages leaking less than 200 litres and compressed gas leaking from a small cylinder are also considered "small spills".
LARGE SPILLS involve many small leaking packages or a leaking package of greater than 200 litres, such as a cargo tank, portable tank or a "one-tonne" compressed gas cylinder.
- 5 Guide 115 is taken from the US DOT emergency response guide book.
- 6 IERG information is derived from CANUTEC - Transport Canada.

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

Used in closed pressurised systems, fitted with safety relief valve. Vented gas is flammable, denser than air and will spread. Vent path must not contain ignition sources, pilot lights, naked flames.

- Atmospheres must be tested and O.K. before work resumes after leakage.
- Obtain a work permit before attempting any repairs.
- Do not attempt repair work on lines, vessels under pressure.

Handle and open container with care.

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.
- DO NOT enter confined spaces until atmosphere has been checked.

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Section 7 - HANDLING AND STORAGE

- Avoid smoking, naked lights, heat or ignition sources.
- When handling, DO NOT eat, drink or smoke.
- Vapour may ignite on pumping or pouring due to static electricity.
- DO NOT use plastic buckets.
- Earth and secure metal containers when dispensing or pouring product.
- Use spark-free tools when handling.
- Avoid contact with incompatible materials.
- Keep containers securely sealed.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions.
- Avoid generation of static electricity. Earth all lines and equipment.
- DO NOT transfer gas from one cylinder to another.

SUITABLE CONTAINER

- Cylinder:
 - Ensure the use of equipment rated for cylinder pressure.
 - Ensure the use of compatible materials of construction.
 - Valve protection cap to be in place until cylinder is secured, connected.
 - Cylinder must be properly secured either in use or in storage.
 - Cylinder valve must be closed when not in use or when empty.
 - Segregate full from empty cylinders.
- WARNING: Suckback into cylinder may result in rupture. Use back-flow preventive device in piping.
- Check that containers are clearly labelled.
- Packaging as recommended by manufacturer.

STORAGE INCOMPATIBILITY

Segregate from. oxygen gas, oxidising agents.

STORAGE REQUIREMENTS

Store in a cool, dry place. Store in a flame proof area.
No smoking, naked lights, heat or ignition sources.
Store in a cool area and away from sunlight. Store below 45 deg. C.
Store in a well-ventilated area. Store away from incompatible materials.
Store in an upright position. - Outside or detached storage is preferred.
Protect containers against physical damage.

- Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry area protected from environmental extremes.
- Store away from incompatible materials and foodstuff containers.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storing and handling recommendations
- Consider storage in bunded areas - ensure storage areas are isolated from sources of community water (including stormwater, ground water, lakes and streams).
- Ensure that accidental discharge to air or water is the subject of a contingency disaster management plan; this may require consultation with local authorities.

Rotate all stock to prevent ageing. Use on FIFO (First In-First Out) basis.

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

Source	Material	TWA ppm	TWA mg/m ³	STEL ppm	STEL mg/m ³
Australia Exposure Standards	carbon dioxide (Carbon dioxide)	5000	9000	30000	54000

The following materials had no OELs on our records

- natural gas, compressed:

CAS:68410- 63- 9

ODOUR SAFETY FACTOR (OSF)

OSF=0.068 (natural gas, compressed)

Exposed individuals are NOT reasonably expected to be warned, by smell, that the Exposure Standard is being exceeded.

Odour Safety Factor (OSF) is determined to fall into either Class C, D or E.

The Odour Safety Factor (OSF) is defined as:

OSF= Exposure Standard (TWA) ppm/ Odour Threshold Value (OTV) ppm

Classification into classes follows:

Class	OSF	Description
A	550	Over 90% of exposed individuals are aware by smell that the Exposure Standard (TLV- TWA for example) is being reached, even when distracted by working activities
B	26- 550	As " A" for 50- 90% of persons being distracted
C	1- 26	As " A" for less than 50% of persons being distracted
D	0.18- 1	10- 50% of persons aware of being tested perceive by smell that the Exposure Standard is being reached
E	<0.18	As " D" for less than 10% of persons aware of being tested

MATERIAL DATA

INGREDIENT DATA

NATURAL GAS, COMPRESSED:

Sensory irritants are chemicals that produce temporary and undesirable side-effects on the eyes, nose or throat. Historically occupational exposure standards for these irritants have been based on observation of workers' responses to various airborne concentrations. Present day expectations require that nearly every individual should be protected against even minor sensory irritation and exposure standards are established using uncertainty factors or safety factors of 5 to 10 or more. On occasion animal no-observable-effect-levels (NOEL) are used to determine these limits where human results

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

are unavailable. An additional approach, typically used by the TLV committee (USA) in determining respiratory standards for this group of chemicals, has been to assign ceiling values (TLV C) to rapidly acting irritants and to assign short-term exposure limits (TLV STELs) when the weight of evidence from irritation, bioaccumulation and other endpoints combine to warrant such a limit. In contrast the MAK Commission (Germany) uses a five-category system based on intensive odour, local irritation, and elimination half-life. However this system is being replaced to be consistent with the European Union (EU) Scientific Committee for Occupational Exposure Limits (SCOEL); this is more closely allied to that of the USA.

OSHA (USA) concluded that exposure to sensory irritants can:

- cause inflammation
- cause increased susceptibility to other irritants and infectious agents
- lead to permanent injury or dysfunction
- permit greater absorption of hazardous substances and
- acclimate the worker to the irritant warning properties of these substances thus increasing the risk of overexposure.

TLV TWA: 1000 ppm as aliphatic hydrocarbon gases, alkane C1-C4

ES TWA: simple asphyxiant

PERSONAL PROTECTION

EYE

- Safety glasses with side shields; or as required,
- Chemical goggles.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].

HANDS/FEET

Wear chemical protective gloves, eg. PVC.

Wear safety footwear.

OTHER

- Protective overalls, closely fitted at neck and wrist.
- Eye-wash unit.

IN CONFINED SPACES:

- Non-sparking protective boots
- Static-free clothing.
- Ensure availability of lifeline.

Staff should be trained in all aspects of rescue work.

Rescue gear: Two sets of SCUBA breathing apparatus Rescue Harness, lines etc.

Operators should be trained in correct use & maintenance of respirators.

Ensure that there is ready access to breathing apparatus.

Ensure ready access to a burns first aid kit.

RESPIRATOR

Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

Breathing Zone Level
ppm (volume)

Maximum Protection
Factor

Half- face Respirator

Full- Face Respirator

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

1000	10	AX- - AUS	-
1000	50	-	AX- - AUS
5000	50	Airline *	-
5000	100	-	AX- - 2
10000	100	-	AX- - 3
	100+		Airline**

* - Continuous Flow

** - Continuous-flow or positive pressure demand.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.

For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

ENGINEERING CONTROLS

Areas where cylinders are stored require good ventilation and if enclosed need discrete / controlled exhaust ventilation.

Local exhaust ventilation (explosion proof) usually required.

Ventilation should ensure that work place atmospheres do not reach 25% of lower explosive limit.

Respiratory protection in form of air supplied or self contained breathing equipment must be worn if oxygen concentration in the air is suspected to be less than 19%. Cartridge respirator do NOT give protection and may result in rapid suffocation.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Invisible, highly flammable gas which readily forms explosive mixtures in air.

Odourant in the form of tertiary butylmercaptan (TBM) 30% and tetrahydrothiophene (THT) 70% is added to allow detection, recognition.

Gas is less dense than air. Burns with a pale, luminous flame.

Practically insoluble in water. Soluble in alcohol, ether, hydrocarbons

Packed as a gas under pressure. Sudden release of pressure or leakage will result in generation of a large volume of highly flammable / explosive gas.

PHYSICAL PROPERTIES

Gas.

Does not mix with water.

Floats on water.

Molecular Weight: 16.04

Melting Range (°C): - 182

Solubility in water (g/L): Immiscible

pH (1% solution): Not applicable.

Volatile Component (%vol): 100

Relative Vapour Density (air=1): 0.615

Lower Explosive Limit (%): 5.0

Autoignition Temp (°C): 540

State: Compressed gas

Boiling Range (°C): - 162

Specific Gravity (water=1): 0.615 (Air = 1)

pH (as supplied): Not applicable

Vapour Pressure (kPa): Not applicable.

Evaporation Rate: Not applicable

Flash Point (°C): - 2 18

Upper Explosive Limit (%): 15.0

Decomposition Temp (°C): Not available

Viscosity: Not available

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Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

Presence of incompatible materials. Presence of elevated temperatures.
- Presence of heat source and ignition source.
Product is considered stable under normal handling conditions.
Hazardous polymerisation will not occur.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

Refer to inhalation.

EYE

The gas is non harmful to the eyes.

SKIN

The gas is non harmful to the skin.

INHALED

The gas acts as a simple asphyxiant by partially displacing, replacing the air required to support human life.

Symptoms of asphyxiation include shortness of breath, rapid fatigue, nausea and vomiting, cyanosis (blue skin colour), diminished mental alertness and impaired muscular coordination. Prolonged exposure to oxygen deficient atmospheres can lead to collapse and death.

CHRONIC HEALTH EFFECTS

No long term effects.

TOXICITY AND IRRITATION

Not available. Refer to individual constituents.

NATURAL GAS, COMPRESSED:

unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

No significant acute toxicological data identified in literature search.

Section 12 - ECOLOGICAL INFORMATION

No data for AGL Natural Gas.

Refer to data for ingredients, which follows:

NATURAL GAS, COMPRESSED:

The lower molecular weight hydrocarbons are expected to form a "slick" on the surface of waters after release in calm sea conditions. This is expected to evaporate and enter the atmosphere where it will be degraded through reaction with hydroxy radicals.

Some of the material will become associated with benthic sediments, and it is likely to be spread over a fairly wide area of sea floor. Marine sediments may be either aerobic or

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Section 12 - ECOLOGICAL INFORMATION

anaerobic. The material, in probability, is biodegradable, under aerobic conditions (isomerised olefins and alkenes show variable results). Evidence also suggests that the hydrocarbons may be degradable under anaerobic conditions although such degradation in benthic sediments may be a relatively slow process.

Under aerobic conditions the material will degrade to water and carbon dioxide, while under anaerobic processes it will produce water, methane and carbon dioxide.

Based on test results, as well as theoretical considerations, the potential for bioaccumulation may be high. Toxic effects are often observed in species such as blue mussel, daphnia, freshwater green algae, marine copepods and amphipods.

Drinking Water Standards:

hydrocarbon total: 10 ug/l (UK max.).

DO NOT discharge into sewer or waterways.

Section 13 - DISPOSAL CONSIDERATIONS

Discharge to burning flare.

Ensure damaged or non-returnable cylinders are gas-free before disposal.

Return empty or damaged cylinders to supplier.

Section 14 - TRANSPORTATION INFORMATION



Labels Required: FLAMMABLE GAS

HAZCHEM: 2[S]E

UNDG:

Dangerous Goods Class: 2.1 Subrisk: None

UN Number: 1971 Packing Group: None

Shipping Name: METHANE, COMPRESSED or NATURAL GAS, COMPRESSED

Air Transport IATA:

ICAO/IATA Class: 2.1 ICAO/IATA Subrisk: None

UN/ID Number: 1971 Packing Group: None

Special provisions: A1

Cargo Only

Packing Instructions: 200 Maximum Qty/Pack: 150 kg

Passenger and Cargo Packing Instructions: Forbidden Maximum Qty/Pack: Forbidden

Passenger and Cargo Packing Instructions: Forbidden Maximum Qty/Pack: Forbidden

Limited Quantity Packing Instructions: - Maximum Qty/Pack: -

Packing Instructions: - Maximum Qty/Pack: -

Shipping Name: METHANE, COMPRESSED

Maritime Transport IMDG:

IMDG Class: 2.1 IMDG Subrisk: None

UN Number: 1971 Packing Group: None

EMS Number: F- D, S- U Special provisions: None

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Section 14 - TRANSPORTATION INFORMATION

Limited Quantities: None

Shipping Name: METHANE, COMPRESSED or NATURAL GAS,
COMPRESSED with high methane content

Section 15 - REGULATORY INFORMATION

POISONS SCHEDULE: None

REGULATIONS

AGL Natural Gas (CAS: None):

No regulations applicable

natural gas, compressed (CAS: 68410-63-9) is found on the following regulatory lists:

Australia Inventory of Chemical Substances (AICS)

International Air Transport Association (IATA) Dangerous Goods Regulations

OECD Representative List of High Production Volume (HPV) Chemicals

Section 16 - OTHER INFORMATION

EXPOSURE STANDARD FOR MIXTURES

natural gas, compressed

0.0000

99.9

Operations which produce a spray/mist or fume/dust, introduce particulates to the breathing zone.

If the breathing zone concentration of ANY of the components listed below is exceeded, "Worst Case" considerations deem the individual to be overexposed.

At the "Composite Exposure Standard for Mixture" (TWA) (mg/m³): mg/m³

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

A list of reference resources used to assist the committee may be found at:
www.chemwatch.net/references.

The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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