

LOOKING FOR NATGAS SAFETY INFORMATION???

WHAT INFO SHOULD THE NATGAS MSDS PROVIDE?

Posted by [Post Message](#) on March 28, 2002 at 20:36:34:

I have a desperate need to obtain a comprehensive breakdown on the substances contained in natural gas delivered by _____ in _____. My family and myself were exposed to high levels of natural gas for over 30 days due to an undetected gas leak in the inner-wall of our new house.

Despite repeated inquiries, _____ refuses to provide anything more than a 4 page MSDS document that literally says natural gas is non-toxic. I have contacted such agencies as the EPA, OSHA, NIOSH, and CDC in an attempt to get more detailed info, but no luck.

Even though toxicologists at those agencies agree that _____'s MSDS lacks many substances each knew had to be present in the gas, none had any enforcement power to require the disclosure.

Logically, given _____'s knowledge of the urgency of our request, the only reason why they would continue to withhold the information is because they are afraid of what that disclosure would show.

I even checked with _____ (lab) in _____ about seeing if they could readily identify all the substances present in the natural gas, and it was a 'no go.' Almost impossible without extensive and prolong testing. 'Way too many variables.'

Any suggestions?



MATERIAL SAFETY DATA SHEET

**PRODUCT NAME: NATURAL GAS REFERENCE STANDARDS
(GPA GAS REFERENCE, HIGH HELIUM, AND HIGH ETHANE)**

1. Chemical Product and Company Identification

**BOC Gases,
Division of,
The BOC Group, Inc.
575 Mountain Avenue
Murray Hill, NJ 07974**

**BOC Gases
Division of
BOC Canada Limited
5975 Falbourne Street, Unit 2
Mississauga, Ontario L5R 3W6**

**TELEPHONE NUMBER: (908) 464-8100
24-HOUR EMERGENCY TELEPHONE
NUMBER: CHEMTREC (800) 424-9300**

**TELEPHONE NUMBER: (905) 501-1700
24-HOUR EMERGENCY TELEPHONE
NUMBER: (905) 501-0802
EMERGENCY RESPONSE PLAN NO: 2-0101**

PRODUCT NAME: Natural Gas Reference Standards – GPA Gas Reference, High Helium, and High Ethane
CHEMICAL NAME: Mixture
COMMON NAMES/SYNONYMS: None
TDG (Canada) CLASSIFICATION: 2.1
WHMIS CLASSIFICATION: A, B1

PREPARED BY: Loss Control (908)464-8100/(905)501-1700
PREPARATION DATE: 7/14/00
REVIEW DATES: 7/14/00

2. Composition, Information on Ingredients

EXPOSURE LIMITS¹:

INGREDIENT	% VOLUME	PEL-OSHA²	TLV-ACGIH³	LD₅₀ or LC₅₀ Route/Species
Methane FORMULA: CH ₄ CAS: 74-82-8 RTECS #: PA1490000	62-93	None Established	Simple Asphyxiant	Not Available
Ethane FORMULA: C ₂ H ₆ CAS:74-84-0 RTECS #:KH3800000	3-11	None Established	Simple Asphyxiant	Not Available
Nitrogen FORMULA: N ₂ CAS: 7727-37-9 RTECS #: QW9700000	1-9	None Established	Simple Asphyxiant	Not Available
Propane FORMULA: C ₃ H ₈ CAS: 74-98-6 RTECS #: SE7545000	1-7	1000 ppm	Simple Asphyxiant	Not Available
Isobutane FORMULA: C ₄ H ₁₀ CAS: 75-28-5 RTECS #: TZ4300000	1-3	None Established	800 ppm	Not Available

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INGREDIENT	% VOLUME	PEL-OSHA ²	TLV-ACGIH ³	LD ₅₀ or LC ₅₀ Route/Species
n-Butane FORMULA: C ₄ H ₁₀ CAS: 106-97-8 RTECS #: EJ4300000	1-3	None Established	800 ppm TWA	LC ₅₀ : 276,000 ppm inhalation/rat (4 H)
Helium FORMULA: He CAS: 7440-59-7 RTECS #: MH6520000	≤ 2	None Established	Simple Asphyxiant	Not Available
Isopentane FORMULA: C ₅ H ₁₂ CAS: 78-78-4 RTECS #: EK4430000	≤ 1	1000 ppm TWA	600 ppm TWA	LC ₅₀ : 140,000 ppm inhalation/mouse (2 H)
n-Pentane FORMULA: C ₅ H ₁₂ CAS: 1096-65-0 RTECS #: RZ9450000	≤ 1	1000 ppm TWA	600 ppm TWA	LC ₅₀ : 123,000 ppm inhalation/rat (4 H)
Carbon dioxide FORMULA: CO ₂ CAS: 124-38-9 RTECS #: FF6400000	≤ 1	5000 ppm TWA	5000 ppm TWA 30,000 ppm STEL	Not Available

¹ Refer to individual state of provincial regulations, as applicable, for limits which may be more stringent than those listed here.

² As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993)

³ As stated in the ACGIH 2000 Threshold Limit Values for Chemical Substances and Physical Agents.

OSHA Regulatory Status: This material is classified as hazardous under OSHA regulations.

3. Hazards Identification

EMERGENCY OVERVIEW

Colorless flammable gas with slight petroleum odor. Dangerous fire and explosion hazard. Avoid heat, sparks and flames. The majority of this product consists of simple asphyxiants which displace oxygen necessary to support life. Release in confined area may cause suffocation. Simple hydrocarbons may cause irritation and central nervous system depression at high concentrations. Maintain oxygen levels above 19.5%. Contents under pressure. Use and store below 125 °F.

ROUTE OF ENTRY:

Skin Contact No	Skin Absorption No	Contact No	Inhalation Yes	Ingestion No
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HEALTH EFFECTS:

Exposure Limits Yes	Irritant No	Sensitization No
Teratogen No	Reproductive Hazard No	Mutagen No
Synergistic Effects None reported		

Carcinogenicity: -- NTP: No IARC: No OSHA: No

EYE EFFECTS:

May cause minor irritation at high concentrations.

SKIN EFFECTS:

MSDS: G-458

Revised: 7/14/00

PRODUCT NAME: NATRUAL GAS REFERENCE STANDARDS (GPA GAS REFERENCE, HIGH HELIUM, AND HIGH ETHANE)
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Repeated or prolonged contact may cause irritation.

INGESTION EFFECTS:

None known. Ingestion is unlikely.

INHALATION EFFECTS:

High concentrations may irritate the eyes and mucous membranes. Methane, ethane, nitrogen, propane, and helium act as simple asphyxiants. Exposure to high concentrations of this gas mixture may exclude an adequate supply of oxygen. High concentrations of simple hydrocarbons present in this mixture may have a narcotic effect. Effects of carbon dioxide exposure may or may not be seen at concentrations present. High concentrations of carbon dioxide may cause vasodilation. Oxygen levels should be maintained at greater than 19.5% at normal atmospheric pressure.

Narcotic effects may include dizziness, incoordination, sleepiness, and unconsciousness. Effects of oxygen deficiency resulting from simple asphyxiants may include: rapid breathing, diminished mental alertness, impaired muscular coordination, faulty judgement, depression of all sensations, emotional instability, and fatigue. If victim is not removed from exposure, unconsciousness may result eventually leading to convulsions, coma, and death.

Oxygen deficiency during pregnancy has produced developmental abnormalities in humans and experimental animals.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: None known.

NFPA HAZARD CODES

HMIS HAZARD CODES

RATINGS SYSTEM

Health: 1
Flammability: 4
Instability: 0

Health: 0
Flammability: 4
Reactivity: 0

0 = No Hazard
1 = Slight Hazard
2 = Moderate Hazard
3 = Serious Hazard
4 = Severe Hazard

4. First Aid Measures

EYES:

If irritation occurs, rinse eyes thoroughly with lukewarm water. If irritation persists, seek medical attention.

SKIN:

If irritation occurs, wash skin thoroughly with soap and water.

INGESTION:

Not normally required.

INHALATION:

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO THIS PRODUCT. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS. Victims should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. If breathing has stopped administer artificial resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive. Keep victim warm and quiet.

PRODUCT NAME: NATRUAL GAS REFERENCE STANDARDS
(GPA GAS REFERENCE, HIGH HELIUM, AND HIGH ETHANE)

5. Fire Fighting Measures

Conditions of Flammability: Flammable gas		
Flash point: Gas	Method: Not Applicable	Autoignition Temperature: No Data
LEL(%): No Data*		UEL(%): No Data*
Hazardous combustion products: Carbon dioxide, Carbon monoxide		
Sensitivity to mechanical shock: None		
Sensitivity to static discharge: Not Available		

* The LELs for the flammable components in this mixture range from 1.4 (n-pentane) to 5.0 (methane). The UELs for the flammable components in this mixture range from 7.6 (n-pentane) to 15 (methane).

FIRE AND EXPLOSION HAZARDS:

Flammable gas. Cylinder may rupture violently from pressure when involved in a fire situation.

EXTINGUISHING MEDIA:

Carbon dioxide, dry chemical or water spray.

FIRE FIGHTING INSTRUCTIONS:

If possible, stop the flow of gas. Inerting the atmosphere to reduce oxygen levels may extinguish flame, allowing capping of leaking container. Do not attempt this unless specifically trained. Reduce the rate of flow and inject an inert gas, if possible, before completely stopping the flow to prevent flashback. Do not extinguish the fire until the supply is shut off as otherwise an explosive re-ignition may occur. If the fire is extinguished and the flow of gas continues, use increased ventilation to prevent build-up of explosive atmosphere. Use non-sparking tools to close container valves.

Use water spray to cool surrounding containers. Be cautious of a Boiling Liquid Evaporating Vapor Explosion, BLEVE, if flame is impinging on surrounding containers. Direct 500 GPM water stream onto containers above liquid level with remote monitors. Limit the number of personnel in proximity of fire and evacuate surrounding areas in all directions.

Firefighters should wear respiratory protection (SCBA) and full turnout or Bunker gear. Continue to cool fire-exposed cylinders until well after flames are extinguished.

6. Accidental Release Measures

Immediately extinguish all ignition sources. No smoking, flames, sparks or flares in hazard area. Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with inert gas prior to attempting repairs. If leak is in container or container valve, contact the appropriate emergency telephone number listed in Section 1 or call your closest BOC location.

7. Handling and Storage

Electrical Classification:

Not Available

Earth ground and bond all lines and equipment associated with the system. All equipment should be non-sparking or explosion-proof.

MSDS: G-458

Revised: 7/14/00

PRODUCT NAME: NATRUAL GAS REFERENCE STANDARDS (GPA GAS REFERENCE, HIGH HELIUM, AND HIGH ETHANE)
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Methane is non-corrosive and may be used with any common structural material.

Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure regulator when connecting cylinder to lower pressure piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area of non-combustible construction away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 125°F (52°C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in-first out" inventory system to prevent full cylinders from being stored for excessive periods of time. Post "NO SMOKING" signs in use or storage areas. There should be no source for accidental ignition in areas where this product is being used or stored. Outside or detached storage is preferred.

For additional storage recommendations, consult Compressed Gas Association's Pamphlets P-1, P-14, and Safety Bulletin SB-2.

8. Exposure Controls, Personal Protection

ENGINEERING CONTROLS:

Local exhaust ventilation in combination with enclosed processes as necessary to control air contaminants to at or below acceptable exposure guidelines. All ventilation systems must be suitable for use with this flammable gas mixture.

EYE/FACE PROTECTION:

Safety goggles or glasses.

SKIN PROTECTION:

Protective gloves of suitable material as necessary to prevent exposure.

RESPIRATORY PROTECTION:

Positive pressure air line with mask and escape bottle or self-contained breathing apparatus should be available for emergency use.

OTHER/GENERAL PROTECTION:

Safety shoes.

9. Physical and Chemical Properties

PARAMETER	VALUE	UNITS
Physical state (gas, liquid, solid)	: Gas	
Vapor pressure	: Not Available	
Vapor density (Air = 1)	: Not Available	
Evaporation point	: Not Available	
Boiling point (for ethane)	: -285.7	°F
	: -161.5	°C
Freezing point (for ethane)	: -296.5	°F
	: -182.5	°C
pH	: Not Applicable	
Specific gravity (for ethane)	: 0.55	
Oil/water partition coefficient	: Not Available	
Solubility (H ₂ O)	: Negligible	
Odor threshold	: No Data	
Odor and appearance	: Colorless gas with slight petroleum odor	

10. Stability and Reactivity

STABILITY:

Stable

INCOMPATIBLE MATERIALS:

Oxidizers

HAZARDOUS POLYMERIZATION:

Will not occur.

11. Toxicological Information

INHALATION:

In humans, pentane has caused slight dizziness in humans at concentrations of 5000 ppm (10 min exposure) but no noticeable nose, eye or respiratory irritation. Individuals exposed to 10,000 ppm (1%) butane for 10 minutes exhibited drowsiness but no systemic effects.

SKIN AND EYE:

May cause minor eye irritation.

CHRONIC:

Long-term adverse effects have been noted for mixtures containing pentane and other volatile hydrocarbons (polyneuropathy). Similar effects have not been reported for pure pentane or butane. Pentane in solvent mixtures may potentiate hexacarbon neuropathy possibly due to smaller amounts of n-hexane and MBK present.

12. Ecological Information

No data given.

MSDS: G-458

Revised: 7/14/00

PRODUCT NAME: NATRUAL GAS REFERENCE STANDARDS
(GPA GAS REFERENCE, HIGH HELIUM, AND HIGH ETHANE)

13. Disposal Considerations

Do not attempt to dispose of residual waste or unused quantities. Return in the shipping container PROPERLY LABELED, WITH ANY VALVE OUTLET PLUGS OR CAPS SECURED AND VALVE PROTECTION CAP IN PLACE to BOC Gases or authorized distributor for proper disposal.

14. Transport Information

PARAMETER	United States DOT	Canada TDG
PROPER SHIPPING NAME:	Compressed gases, flammable, n.o.s. (methane, ethane)	Compressed gases, flammable, n.o.s. (methane, ethane)
HAZARD CLASS:	2.1	2.1
IDENTIFICATION NUMBER:	UN 1954	UN 1954
SHIPPING LABEL:	FLAMMABLE GAS	FLAMMABLE GAS

15. Regulatory Information

SARA TITLE III NOTIFICATIONS AND INFORMATION

SARA TITLE III - HAZARD CLASSES:

Fire Hazard
Sudden Release of Pressure Hazard

16. Other Information

ACGIH	American Conference of Governmental Industrial Hygienists
DOT	Department of Transportation
IARC	International Agency for Research on Cancer
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
SARA	Superfund Amendments and Reauthorization Act
STEL	Short Term Exposure Limit
TDG	Transportation of Dangerous Goods
TLV	Threshold Limit Value
WHMIS	Workplace Hazardous Materials Information System

Compressed gas cylinders shall not be refilled without the express written permission of the owner. Shipment of a compressed gas cylinder which has not been filled by the owner or with his/her (written) consent is a violation of transportation regulations.

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES:

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).

EL PASO CORPORATION

MATERIAL SAFETY DATA SHEET

NATURAL GAS

#102

1. CHEMICAL PRODUCT and COMPANY INFORMATION

EL PASO CORPORATION
1001 LOUISIANA
HOUSTON, TEXAS 77002

NFPA HAZARD RATING
HEALTH: 1
FIRE: 4
REACTIVITY: 0
OTHER: -

EMERGENCY TELEPHONE: INFOTRAC (800) 535-5053 (24 HOURS)

CHEMICAL FAMILY Complex mixture of petroleum hydrocarbons.

SYNONYMS: Dry Natural Gas, Compressed Natural Gas (CNG), Liquefied Natural Gas (LNG), Methane, Processed Gas, Sweet Natural Gas, Treated Gas.



BE SAFE! READ OUR PRODUCT SAFETY INFORMATION
AND PASS IT ON!
(PRODUCT LAW REQUIRES IT!)

2. COMPOSITION AND INFORMATION ON INGREDIENTS

Ingredient Name	CAS Number	OSHA PEL	ACGIH TLV	ACGIH (STEL)	Concentration (percent 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 odorized with trace amounts of odorant (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 vapor may cause frostbite or freeze.

EL PASO CORPORATION

MATERIAL SAFETY DATA SHEET

NATURAL GAS

#102

3. HAZARDS

PRIMARY ROUTES OF ENTRY:

Eyes: NO Skin: NO Inhalation: YES Ingestion: NO

EYES

Vapors are not irritating. However, contact with liquid or cold vapor may cause frostbite, freeze burns, and permanent eye damage.

SKIN

Vapors are not irritating. Direct contact to the skin or mucous membrane with liquefied product or cold vapor may cause freeze burns and frostbite. Signs of frostbite include a change in the color of skin to gray 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 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

EYES

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 105 degrees). 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 ointment 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.

INGESTION

DO NOT INDUCE VOMITING 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 liquids to an unconscious person.

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.

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MATERIAL SAFETY DATA SHEET

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5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT METHOD:	Extremely Flammable gas
AUTOIGNITION POINT:	900-1170°F (482 -632°C)
OSHA/NFPA FLAMMABILITY CLASS:	Flammable gas
LOWER EXPLOSIVE LIMIT (%):	3.8 - 6.5
UPPER EXPLOSIVE LIMIT (%):	13 - 17

FIRE AND EXPLOSION HAZARDS

Liquid releases of flammable vapors at well below ambient temperatures readily form a flammable mixture with air. Dangerous fire and explosion hazard when exposed to heat, sparks, or flame. Vapors are heavier than air and may travel long distances to a point of ignition or flashback. Container may explode in heat or fire. 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 INSTRUCTIONS

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 vapor 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 minimize 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 facepiece and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

ACTIVATE FACILITY SPILL CONTINGENCY PLAN (e.g. SPCC, RCRA, OPA, or EMERGENCY plan).

Evacuate nonessential personnel and remove or secure all ignition sources. Consider wind direction; stay upwind and uphill, if possible to evaluate the direction of product travel. Vapor cloud may be white, but color 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 vapors. 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.

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8. EXPOSURE CONTROLS and PERSONAL PROTECTION

ENGINEERING CONTROLS

Use adequate ventilation to keep vapor 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 faceshield.

SKIN PROTECTION

When contact with liquid may occur, wear apron, faceshield, 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 (i.e., 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 CHEMICAL PROPERTIES

APPEARANCE

A colorless gas. Cold vapor cloud may be white but the lack of visible gas cloud does not indicate absence of gas. A colorless liquid under pressure.

ODOR

Odorless when pure, but may have a "natural gas" type odor when treated with odorizing agent (usually t-butyl mercaptan).

BASIC PHYSICAL PROPERTIES

BOILING RANGE:	-259°F (-162°C)
VAPOR PRESSURE:	40 atm. @ -187°F (-86°C)
VAPOR DENSITY (air = 1):	0.6
SPECIFIC GRAVITY (H2O = 1)	0.4 @ -263°F (164°C)
SOLUBILITY (H2O):	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 oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide, carbon dioxide, and noncombustible hydrocarbons (smoke).

HAZARDOUS POLYMERIZATION

Will not occur.

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11. TOXICOLOGICAL PROPERTIES

CHRONIC EFFECTS OF CARCINOGENICITY

OSHA: NO IARC: NO NTP: NO ACGIH: NO

12. ECOLOGICAL INFORMATION

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

13. DISPOSAL CONSIDERATIONS

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

14. TRANSPORTATION INFORMATION

PROPER SHIPPING NAME: Natural Gas Compressed (with high methane content)
HAZARD CLASS: 2.1
DOT IDENTIFICATION NUMBER: UN1971
DOT SHIPPING LABEL: FLAMMABLE GAS

PROPER SHIPPING NAME: Natural Gas Refrigerated Liquid (Cryogenic liquid with high methane content)
HAZARD CLASS: 2.1
DOT IDENTIFICATION NUMBER: UN1972
DOT SHIPPING LABEL: FLAMMABLE GAS

15. REGULATORY INFORMATION

U.S. FEDERAL REGULATORY INFORMATION

This product and its constituents listed herein are on the EPA TSCA Inventory.

Any spill or uncontrolled release of this product, including any substantial threat of release, may be subject to federal reporting requirements. Consult those regulations applicable to your facility/operation.

CERCLA SECTION 103 and SARA SECTION 304 (RELEASE TO THE ENVIRONMENT)

The CERCLA definition of hazardous substances contains a "petroleum exclusion" clause which exempts crude oil, refined, and unrefined petroleum products and any indigenous components of such. However, other federal reporting requirements (e.g. SARA Section 304 as well as the Clean Water Act if the spill occurs on navigable waters) may still apply.

SARA TITLE III - SECTION 313 SUPPLIER NOTIFICATION

SARA TITLE III - HAZARD CLASSES: ACUTE HEALTH HAZARD
CHRONIC HEALTH HAZARD
FIRE HAZARD

This product does not contain any chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986 and of 40 CFR 372. **This information must be included on all MSDSs that are copied and distributed for this material.**

U.S. STATE REGULATORY INFORMATION

Any spill or controlled release of this product may be subject to state and/or local reporting requirements. This product and/or its constituents may also be subject to other regulations at the state and/or local level. Consult those regulations applicable to your facility/operation.

CANADIAN REGULATORY INFORMATION (WHMIS)

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WHIMS: Class A (Compressed Gas) Class B, Division 1 (Flammable Gas)

16. OTHER INFORMATION

NFPA HAZARD RATING	HEALTH:	1	Slight
	FIRE:	4	Extreme
	REACTIVITY:	0	Negligible
	OTHER:	-	

HMIS HAZARD RATING	HEALTH:	1	Slight
	FIRE:	4	Severe
	REACTIVITY:	0	Minimal

Supercede: 12/98

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

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Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable SAFETY procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material, even if reasonable SAFETY procedures are followed. Furthermore, vendee assumes the risk in their use of the material.

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION

El Paso Corporation
and its subsidiaries
1001 Louisiana Street
Houston, Texas 77002

Information: (713) 420-2600
CHEMTREC: (800) 424-9300

Product Name: Natural Gas
MSDS Number: A0004.msd

Last Revision: 10/17/02
Date Prepared: 09/02/97

Synonyms: Marsh Gas

Product Description: Methane, Methyl Hydride, Aliphatic Hydrocarbon.

2. COMPOSITION & INFORMATION ON INGREDIENTS

Product	CAS No.	Wt%	Occupational Exposure Limits*			Units
			OSHA PEL	ACGIH TLV	Other	
Natural Gas	Mixture	N/A	N/A	N/A		
Components						
Methane	74-82-8	60-95***	N/A	**		
Ethane	74-84-0	2-15	N/A	**		
Propane	74-98-6	1-10	1000	**		ppm
Butane	109-97-8	0-4	800##	800		ppm
Isobutane	75-28-5	0-4	800##			ppm
Pentane	109-66-0	0-2	600	600		ppm
Isopentane	78-78-4	0-2	N/A			
Hexane	110-54-3	0-2	50	50		ppm
Isohexane	107-83-5	0-2	500	500	1000#	ppm
Nitrogen	7727-37-9	0-15	N/A	**		
Carbon Dioxide	124-38-9	0-5	10000	5000	30000#	ppm

Key: * = 8-Hr. TWA unless otherwise specified

** = Simple Asphyxiant

*** = Normal composition ranges are shown. Exceptions may occur depending upon the source of the gas. Methane is the principal component.

N/A = Not Available

= Short Term Exposure Limit; 15 minutes.

= Vacated 1989 PEL The manufacturer has included this data for informational purposes since these values were vacated in 1992.

3. HAZARD IDENTIFICATION

Note: This product has not been tested by El Paso Corporation to determine its specific health hazards. Therefore, the information provided in this section includes health hazard information on the product components.

Carcinogenicity:	NTP	IARC Monographs	OSHA Regulated
	No	No	No

Potential Health Effects from Overexposure:

Acute Effects:

Eyes: Natural gas is generally non-irritating to the eyes. Pressurized gas can cause mechanical injury to the eye. Contact with the liquefied gas may cause frostbite of the eye and surrounding tissue.

Skin: Contact with liquefied gas may cause frostbite.

Inhalation: Causes drowsiness, excitation or unconsciousness due to asphyxiant properties of this gas.

Ingestion: Not Applicable.

Chronic Effects:

Not determined.

Additional Medical and Toxicological Information:

Isobutane and n-butane have been found to cause mild cardiac sensitization in laboratory test animals.

4. FIRST AID MEASURES

Eye Contact: Normally not a concern. If liquefied gas contacts the eye, immediately flush the area with tepid water. Get medical attention by calling 911.

Skin Contact: Promptly flush the affected area with tepid water. If freeze burns have occurred, apply bulky, dry sterile bandage to protect area. Get medical attention by calling 911.

Inhalation: Remove to fresh air. If breathing has stopped, apply artificial respiration. Get medical attention by calling 911.

Ingestion: Not considered necessary.

Medical Providers: Medical providers are urged to contact a Regional Poison Center at 1-800-222-1222.

5. FIRE FIGHTING MEASURES

Flash Point: -306°F

Flammable Limits in Air, % by Volume:

Lower: 4.0

Upper: 15.0

Autoignition Temperature: 1004°F

Extinguishing Media: Dry chemical, foam, or carbon dioxide.

NFPA Ratings: Health: 1 Flammability: 4 Reactivity: 0

General Hazard:

Vapors may reach an ignition source, and flashback. It can be a dangerous fire and explosion hazard when mixed with air.

Fire Fighting Instructions:

Water may be ineffective on flames but should be used to keep fire-exposed containers cool. Extinguish fire by stopping the flow of gas. Keep the surrounding areas cool by using water mists. Avoid solid water streams. Firefighters should wear self-contained breathing apparatus and full protective clothing.

Special Fire Fighting Instructions

BLEVE'S (Boiling Liquid Expanding Vapor Explosions) can occur when a liquid in a pressurized container is heated to temperatures beyond its boiling point. This can lead to failure of the container and damage to the surrounding area.

6. ACCIDENTAL RELEASE

Eliminate sources of heat or ignition including internal combustion engines and power tools. Stop gas flow. If indoors, ventilate the affected areas, downwind areas first.

Leaking containers should be moved outdoors the contents transferred to an appropriate container. Note: Large releases may require the notification of local emergency response agencies. Advise authorities and the National Response Center (1-800-424-8802) if the release is to a watercourse. Wear self-contained breathing apparatus if conditions warrant.

7. HANDLING & STORAGE

Store and use natural gas cylinders and tanks in well-ventilated areas, away from direct sunlight and sources of ignition. No smoking in areas of storage or use. Electrically bond all lines and equipment used with natural gas. Keep away from incompatible

agents and from cylinders of oxygen.

8. EXPOSURE CONTROL, PERSONAL PROTECTION

Eye Protection: Safety glasses or face shields are required when working with pressurized lines or cylinders. Wear chemical goggles when working with liquid natural gas.

Skin Protection: Insulated clothing and/or gloves should be worn where liquid or expanding gas may be generated.

Inhalation: Self-contained breathing apparatus should be available for emergency use.

Ventilation: Provide adequate general and local ventilation: (1) to maintain airborne chemical concentrations below applicable exposure limits, (2) to prevent accumulation of flammable vapors and formation of explosive atmospheres, and (3) to prevent formation of oxygen deficient atmospheres, especially in confined spaces. [Note: this product may displace oxygen in enclosed areas.]

9. PHYSICAL & CHEMICAL PROPERTIES

Boiling Point @760 mmHg: -258°F	Melting Point: N/A
Vapor Pressure mmHg @100°F: N/A	Vapor Density (Air=1):0.6
% Solubility in H ₂ O: Slight	pH: N/A
Specific Gravity 60/60F: 0.5547@0°C	Evaporation Rate N/A
% Volatile by Volume: 100	Odor: Odorless, tasteless
Viscosity (method, temp.): N/A	
Appearance: Gas	

10. STABILITY & REACTIVITY

Stability: Stable under normal conditions of use.

Hazardous Polymerization: Will not occur.

Conditions to Avoid/Incompatibilities: Strong oxidizing agents, chlorine, bromine, pentafluoride, nitrogen trifluoride, heat, sparks, flame, build-up of static electricity.

Hazardous Decomposition Products: Carbon monoxide and carbon dioxide.

11. TOXICOLOGICAL INFORMATION

No data available.

12. ECOLOGICAL INFORMATION

No data available. Most components of natural gas are lighter than air and will therefore be diluted by atmospheric forces in a short period of time.

13. DISPOSAL INFORMATION

This product is not a "listed" hazardous waste. But when disposed of in containers may meet the criteria of being an "ignitable" waste. It is the responsibility of the user to determine if the material disposed of meets federal, state, or local criteria to be defined as a hazardous waste.

14. TRANSPORT INFORMATION

Natural Gas, compressed, 2.1, UN1971

15. REGULATORY INFORMATION

EPA SARA TITLE III

Section 302 EPCRA Extremely Hazardous Substances (EHS)

Product Component	CAS No.	Wt%	RQ, lb	TPQ, lb
None				

Section 304 CERCLA Hazardous Substances

Product Component	CAS No.	Wt%	RQ, lb
Hexane	110-54-3	0-2	5000

Section 311/312 Hazard Categorization

Acute:	Chronic:	Fire:	Pressure:	Reactive:
		X	X	

Section 313 EPCRA Toxic Substances

Ingredient	CAS No.	Wt. %
Hexane	110-54-3	0-2

Key: RQ = Reportable Quantity
TPQ = Threshold Planning Quantity of EHS

CALIFORNIA PROPOSITION 65 WARNING

Chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm may be found in crude oil and petroleum products. Although it is possible to sufficiently refine a crude oil or its end products to remove the potential for cancer, we are advising that one or more of the listed chemicals may be

present in some detectable quantities. Read and follow directions and use care when handling crude oil and petroleum products.

16. OTHER INFORMATION

THIS INFORMATION RELATES ONLY TO THE SPECIFIC MATERIAL DESIGNATED AND MAY NOT BE VALID FOR SUCH MATERIAL USED IN COMBINATION WITH ANY OTHER MATERIALS OR IN ANY PROCESS. SUCH INFORMATION IS TO THE BEST OF THIS COMPANY'S KNOWLEDGE AND BELIEVED ACCURATE AND RELIABLE AS OF THE DATE INDICATED. HOWEVER, NO REPRESENTATION, WARRANTY OR GUARANTEE IS MADE AS TO THE ACCURACY, RELIABILITY OR COMPLETENESS. IT IS THE USER'S RESPONSIBILITY TO SATISFY THEMSELVES AS TO THE SUITABILITY AND COMPLETENESS OF SUCH INFORMATION FOR HIS OWN PARTICULAR USE.

This is the end of MSDS A0004.ms



Material Safety Data Sheet for Natural Gas

Prepared June 2003



Section 1 – Material Identification and Use

Material Name/Identifier:
Natural Gas

Supplier:
Enbridge Gas Distribution
500 Consumers Road
North York, Ontario M2J 1P8

Manufacturer:
Natural gas is a naturally occurring product.

Emergency Telephone Numbers:
If local call 416-447-4911, for
Toll Free dail 1-888-447-4911.

Chemical Name:
Methane

Chemical Family:
Simple hydrocarbons

Material Use:
Primarily a heating fuel for domestic and
industrial purposes.

Trade Name and Synonyms:
Natural Gas

Regulatory Classification:

WHMIS: Class A - Compressed Gas
Class B - Division 1 - Flammable Gas

TDG: Shipping Name - Natural Gas, compressed
(with high methane content)
UN/PIN 1971
Class 2.1 Packing Group X

Section 2 – Hazardous Ingredients

Hazardous Ingredients:

Primarily methane gas with other fossil fuels such as ethane, propane, butane and pentane.

Approximate Concentration %:

95% methane, 3% other fossil fuels, 2% nitrogen

C.A.S. Number:

8006-14-2

Exposure Limits:

Natural gas is not toxic, however; if gas escapes in a confined area, it may displace the air and its oxygen out of the space. Lack of oxygen will asphyxiate anybody remaining in that gas filled space.

LD50/LC50 Specify Species and Route:

Due to oxygen displacement

Section 3 – Physical Data

Physical State:

Gas

Odour and Appearance:

Natural gas in its pure state is colourless and odourless. An odourant, based on Mercaptan is added before natural gas enters a gas utility's distribution system. The odour is quite offensive like rotten eggs.

Odour Threshold (ppm):

Less than 10,000 ppm in air

Specific Gravity:

Not applicable

Vapour Pressure:

Not applicable

Vapour Density (Air = 1):

0.56 to 0.59

Evaporation Rate:

Not applicable

Boiling Point (°C):

- 161.5°C (as methane)

Freezing Point (°C):

- 182.6°C (as methane)

pH:

Not applicable

Coefficient of Water/Oil Distribution:

Not applicable

Section 4 – Fire and Explosion Hazards

Flammable - If Yes, under which conditions?

Yes. Extreme fire hazard when mixed with appropriate concentrations of air or oxygen in the presence of an ignition source.

Means of Extinction:

Dry chemical, Carbon Dioxide, Halon

Caution: If a natural gas fire is extinguished and the flow of gas is not stopped, a highly explosive natural gas-air mixture can accumulate, creating a potentially dangerous hazard if a new source of ignition is introduced.

Flash Point (°C) and Method:

Not applicable

Upper Explosive Limit:

15% gas in air (approximately)

Lower Explosive Limit:

4% gas in air (approximately)

Ignition Temperature (°C):

538°C (1,000°F) (approximately)

Hazardous Combustion Products:
Carbon Monoxide, Carbon Dioxide, Nitrogen Oxides, Sulfur Dioxide, Aldehydes

Explosion Data/Sensitivity:
Not applicable

Sensitivity to Static Discharge:
Yes

Section 5 – Reactivity Data

Chemical Stability:
Yes

Incompatibility with other substances.
If so, which ones?

Yes. Readily forms explosive mixtures with air or oxygen. It will also burn or explode in the presence of chlorine, bromine pentafluoride, oxygen difluoride and nitrogen trifluoride. It will spontaneously ignite in the presence of chlorine dioxide.

Reactivity and under what conditions?

When natural gas mixes with appropriate amounts of oxidizing agents, including air and oxygen, in the presence of an ignition source, an uncontrolled explosive reaction can occur.

Hazardous Decomposition Products:
Combustion releases carbon dioxide, trace amounts of sulfur oxides, and nitrogen oxides. A lack of oxygen during combustion can produce carbon monoxide and other toxic and flammable products.

Hazardous Polymerization:
No

Section 6 – Toxicological Properties

Route of Entry:
Inhalation

Effects of Acute Exposure to Product:
Acts as a simple asphyxiant by displacing oxygen in the air. Symptoms include rapid respiration, nausea, disorientation, and loss of consciousness.

Irritancy:
None reported

Exposure Limits:
Based on oxygen displacement

Sensitization:
None reported

Synergistic Materials:
Other Asphyxiants

Effects of Chronic Exposure to Product:
None reported

Other Effects:
None reported with respect to mutagenicity, carcinogenicity, reproductive toxicity, teratogenicity.

Section 7 – Preventive Measures

Personal Protective Equipment:
CSA/ASA Safety Equipment must be available/worn as required to protect ears, eyes, feet, hands, head, remaining body area. Work around/with natural gas must be performed by individuals qualified to work with natural gas.

Gloves (Specify):
Not normally required.

Respiratory (Specify):
Only required for oxygen depletion concerns. Positive pressure, self-contained breathing apparatus for emergency use when ventilation is inadequate.

Eye (Specify):
Safety goggles not normally required.

Footwear (Specify):
Refer to Personal Protective Equipment

Clothing (Specify):
Non-sparking, flame-retardant when in areas where potential flash fires may occur.

Other (Specify):
Appropriate hearing protection, goggles and clothing should be utilized when potential for direct contact with high pressure gas release exists.

Engineering Controls (Specify):
Use spark-proof or intrinsically safe equipment when dealing with potentially explosive atmosphere. Adequate ventilation and adequate venting of possible combustion products are required.

Leak and Spill Procedures:
Immediately contact local Enbridge Gas Distribution office. Evacuate as necessary. Do not activate any source of ignition such as electrical switches, vehicles, telephones, cellular phones, two-way radios or door bells. Eliminate ignition sources such as open flame or sparks. Ventilate buildings and structures containing natural gas.

Waste Disposal:
Not normally required.

Handling Procedures and Equipment:
All equipment, piping and handling must conform to legislative requirements of the Energy Act and its Regulations.

Storage Requirements:
Storage in either pressure vessels or underground well facilities must comply with all Ontario Legislation requirements outlined under the Energy Act, Boiler Pressure Vessels Act and Petroleum Resources Act.

Special Shipping Information:
Natural gas, when transported by pipeline governed by the law of a province, is exempt from Transportation of Dangerous Goods Act.

Section 8 – First Aid Measures

First Aid Procedures:
Remove victim from contaminated area to fresh air. Perform artificial respiration if necessary, and seek medical assistance.

Section 9 – Preparation of M.S.D.S.

Additional Information and Comments:
The gas flammability hazard should be considered the primary risk factor. Avoid all possible sources of accidental ignition.

Prepared By:
Engineering Materials Evaluation Centre
(416) 495-5636

For more information see:
www.enbridge.com/gas
under Business Solutions
For additional copies, contact our
Environment, Health and Safety Dept.
(416) 495-5480

Caution: Natural gas is a complex mixture such that constituent composition may vary. The information contained herein is based on the information available at the indicated date of preparation but no warranty, expressed or implied is made. Further, the information contained herein relates only to this product or material and may not be valid when used in combination with any other product or material in any process. If the product is not to be used for a purpose or under conditions which are normal or reasonably foreseeable, this information cannot be relied upon as complete or applicable. For greater certainty of information, specific uses of the product must be reviewed with the supplier.

This M.S.D.S. is for the use of Enbridge Gas Distribution Inc., its customers and their employees. Any further distribution of this M.S.D.S. by Enbridge Gas Distribution Inc. customers without the written consent of Enbridge Gas Distribution Inc. is prohibited.

SECTION I
PRODUCT INFORMATION

Supplier : Gaz Métropolitain, 1717, du Havre Street, Montréal, Québec H2K 2X3
Product name : Natural gas (high methane content gas mixture)
Chemical family : Methane, CH₄, elementary hydrocarbons
Product use : Sold for use as heating fuel or as process feedstock
Classification : a) WHMIS : compresses gas (Class A) flammable gas (Class B1)
 b) T.D.G. : U.N. : #1971 Primary classification 2.1 (Flammable gas)

TO REPORT A GAS ODOUR (24 HOUR SERVICE) :

Call 9-1-1, if this service is not yet available in your area, call 1-800-361-8003.

SECTION II
HAZARDOUS COMPONENTS

CHEMICAL NAME	% PER UNIT	CAS #	THRESHOLD LIMIT VALUE
Methane	95,4	74-82-8	Inert gas classified as simple asphyxiant
Ethane	1,8	74-84-0	Simple asphyxiant
Nitrogen	1,9	7727-37-9	Simple asphyxiant
Carbon dioxide	0,7	124-38-9	5000 ppm or 9000 mg/m ³
Other elementary hydrocarbons	0,2		

SECTION III
FIRE AND EXPLOSION DATA

Flash point : -188°C
Flammable limits in air : (% by volume) Lower : 4,9% Upper : 15,0%
Auto-ignition temperature : 538°C approximately
Unusual fire and explosion hazards : Easily ignitable by flame or spark.
 Natural gas is lighter than air and will dissipate into the atmosphere.
 Natural gas without sufficient air or with too much air will not burn or explode.
 Evacuate area if pressure relief valves are activated.
 A hazard from re-ignition or explosion exists if the flame is extinguished without stopping flow of gas and/or cooling surroundings and eliminating ignition source.
Conditions to avoid : Natural gas in uncontrolled mixtures may ignite with spark source and/or static discharge.
Fire extinguishing media : Dry chemical powder, CO₂ for small fires, Halon or accepted equivalent.
Special fire-fighting procedures : Wear full protective equipment and self-contained breathing apparatus.
 Use water fog to cool fire exposed containers and as a protective screen and also to spread vapors.
 Isolate all sources of ignition.
 Stop gas flow whenever possible.
 Do not extinguish flame until gas flow is shut.
Dangerous combustion products : CO (carbon monoxide) if natural gas does not burn completely.

SECTION IV
LEAK PROCEDURES

Steps to be taken : Eliminate all sources of ignition.
 Provide maximum ventilation.
 Call 9-1-1, if this service is not yet available in your area, call 1-800-361-8003.

SECTION V**PHYSICAL DATA**

Physical state :	Gas	Solubility in water :	0,0023 g/100 ml
Appearance and odor :	Odourless colourless gas to which a foul smelling agent (mercaptan) has been added to help detect leaks. (Rotten egg smell).	Percent volatile (by volume) :	100%
Density (@ -162°C) :	0,44 (H ₂ O = 1) 1,51 (air = 1)	Molecular weight :	16,7
Vapour density (@ 15°C) :	0,58 (air = 1)	Vapor pressure :	NA
Boiling point :	-161,4°C	Evaporation rate :	NA

SECTION VI**REACTIVITY DATA**

Stability : Natural gas is stable.

Incompatibility (particular in confined areas) : Some strong oxidizing agents (peroxide, chlorine) with which natural gas can burn or explode in confined areas are : chlorine, dioxide and liquid oxygen. It will ignite spontaneously when mixed with chlorine dioxide.

SECTION VII**HEALTH HAZARD INFORMATION**

Toxicity data : Simple asphyxiant.

Effects of overexposure :

Inhalation : Natural gas may displace oxygen. Lack of oxygen may cause dizziness, headaches, increasing fatigue, impaired muscular coordination progressing to convulsion, coma and death. Narcotic at high concentrations.

Skin and eyes : NA

Ingestion : NA

SECTION VIII**EMERGENCY AND FIRST AID PROCEDURES**

Inhalation : Move the victim to fresh air. Apply CPR if necessary. This practice should always be followed by a medical examination. Administer oxygen if available.

Ingestion : NA

Skin and eyes: NA

Notes to physician : No specific treatment is indicated. Treat with supportive measures as appropriate to the patient's condition.

SECTION IX**PREVENTIVE MEASURES**

Ventilation : General ventilation. Use explosion-proof mechanical ventilation.

Respiratory protection : Not normally required if sufficient oxygen. Self-contained breathing apparatus for non-routine or emergency use.

Protective gloves : Not normally needed.

Eye protection : Wear safety glasses or face shield if contact with natural gas under pressure is a possibility.

Other protective clothing : Not normally needed.

SECTION X**PREPARATION**

**AMERADA HESS CORPORATION****MATERIAL SAFETY DATA SHEET****NATURAL GAS (odorized)****MSDS No. 8010****1. CHEMICAL PRODUCT and COMPANY INFORMATION (rev. Aug-98)**

Amerada Hess Corporation
 1 Hess Plaza
 Woodbridge, NJ 07095-0961

EMERGENCY TELEPHONE NUMBER (24 hrs): CHEMTREC (800) 424-9300**COMPANY CONTACT (business hours):** Corporate Safety (732) 750-6000**SYNONYMS:** Compressed Natural Gas (CNG); Dry Natural Gas ; Methane; Pipeline Spec Gas; Processed Gas; Residue Gas; Sweet Natural Gas; Treated Gas

See Section 16 for abbreviations and acronyms.

2. COMPOSITION and INFORMATION ON INGREDIENTS (rev. Aug-98)

INGREDIENT NAME (CAS Number)	EXPOSURE LIMITS	CONCENTRATION PERCENT BY VOLUME
Natural Gas, dry (68410-63-9)	None established by OSHA or ACGIH Simple asphyxiant; exposure limited by oxygen and flammability	100
Methane (115-07-1)	None established by OSHA or ACGIH Simple asphyxiant	< 90
Ethane (74-84-0)	None established by OSHA or ACGIH Simple asphyxiant	< balance >

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, predominantly methane (C1) and ethane (C2); may contain carbon dioxide (CO₂). Odorized with trace amounts of odorant (see Section 9). This is for natural gas that has been processed and is in commerce.

3. HAZARDS IDENTIFICATION (rev. Aug-98; Tox-98)**EMERGENCY OVERVIEW****DANGER!****EXTREMELY FLAMMABLE GAS - MAY CAUSE FLASH FIRE OR EXPLOSION!**

High concentrations may exclude oxygen and cause dizziness and suffocation. Contact with pressurized vapor may cause frostbite or freeze burn.

EYES

Not irritating. However, contact with pressurized vapor may cause frostbite, freeze burns, and permanent eye damage.

SKIN

Not irritating. Direct contact to skin or mucous membranes with pressurized vapor may cause freeze burns and frostbite. Signs of frostbite include a change in the color of the skin to gray or white, possibly followed by blistering. Skin may become inflamed and painful.

INGESTION

Risk of ingestion is extremely unlikely.

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 exposures to high concentrations.

AMERADAHESSE CORPORATION

MATERIAL SAFETY DATA SHEET

NATURAL GAS (odorized)

MSDS No. 8010

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 when the atmospheric oxygen concentration is reduced to about 6% to 8% or less.

WARNING: The burning of any hydrocarbon as a fuel in an area without adequate ventilation may result in hazardous levels 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 (rev. Aug-98; Tox-98)

EYES

In case of freeze burn cover eyes to protect from light. Seek immediate medical attention.

SKIN

In case of frostbite or freeze burns seek immediate medical attention.

INGESTION

Though risk of ingestion is extremely unlikely, in case of frostbite or freeze burns due to oral exposure seek immediate medical attention.

INHALATION

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

5. FIRE FIGHTING MEASURES (rev. Aug-98)

FLAMMABLE PROPERTIES: (NFPA Natural Gas)

FLASH POINT: Flammable gas
AUTOIGNITION POINT: 900 - 1170 °F (482 - 632 °C)
OSHA/NFPA FLAMMABILITY CLASS: FLAMMABLE GAS
LOWER EXPLOSIVE LIMIT (%): 3.8 - 6.5
UPPER EXPLOSIVE LIMIT (%): 13 - 17

FIRE AND EXPLOSION HAZARDS

Dangerous fire and explosion hazard when exposed to heat, sparks or flame. Natural gas is lighter than air and may travel long distances to a point of ignition and flash back. Container may explode in heat or fire. Liquefied Natural Gas (LNG) releases flammable gas at well below ambient temperatures and readily forms a flammable mixture with air.

EXTINGUISHING MEDIA

Dry chemical, carbon dioxide, Halon or water. However, fire should not be extinguished unless flow of gas can be immediately stopped.

FIRE FIGHTING INSTRUCTIONS

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 vapor to protect personnel attempting to stop leak.

AMERADAHESSE CORPORATION

MATERIAL SAFETY DATA SHEET

NATURAL GAS (odorized)

MSDS No. 8010

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 minimize personnel exposure.

Isolate area, particularly around ends of storage vessels. Let vessel, tank car or container burn unless leak can be stopped. Withdraw immediately in the event of a rising sound from a venting safety device. Large fires typically require specially trained personnel and equipment to isolate and extinguish the fire.

Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH/MSHA- approved pressure-demand self-contained breathing apparatus with full facepiece and full protective clothing.

See Section 16 for the NFPA 704 Hazard Rating.

6. ACCIDENTAL RELEASE MEASURES (rev. Aug-98)

ACTIVATE FACILITY'S SPILL CONTINGENCY or EMERGENCY RESPONSE PLAN.

Evacuate nonessential personnel and secure all ignition sources. No road flares, smoking or flames in hazard area. Consider wind direction, stay upwind, if possible. Evaluate the direction of product travel. Cold vapor cloud may be white, but color will dissipate as cloud disperses - fire and explosion hazard is still present!

Stop the source of the release, if safe to do so. Consider the use of water spray to disperse vapors. Isolate the area until gas has dispersed. Ventilate and gas test area before entering.

7. HANDLING and STORAGE (rev. Aug-98)

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 and storage of this product, including, but not limited to, 29 CFR 1910.110 Storage and Handling of Liquefied Petroleum Gases.

8. EXPOSURE CONTROLS and PERSONAL PROTECTION (rev. Aug-94)

ENGINEERING CONTROLS

Use adequate ventilation to keep gas 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

Splash-proof safety goggles and/or faceshield for protection from pressurized gas

SKIN PROTECTION

Wear apron, faceshield, and cold-impervious, insulating gloves may protect from pressurized gas.

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 for uncontrolled release, if exposure levels are not known, or in an oxygen-deficient atmosphere.

CAUTION: Flammability limits (i.e., explosion hazard) should be considered when assessing the need to expose personnel to concentrations requiring respiratory protection.

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.

AMERADAHESSE CORPORATION

MATERIAL SAFETY DATA SHEET

NATURAL GAS (odorized)

MSDS No. 8010

9. PHYSICAL and CHEMICAL PROPERTIES (rev. Jun-97)

APPEARANCE

Colorless gas. Cold vapor cloud may be white but the lack of visible gas cloud does not indicate absence of gas.

ODOR

Natural gas has a distinctive, disagreeable "natural gas" type odor when treated with an odorizing agent (typically < 0.1% ethyl mercaptan).

BASIC PHYSICAL PROPERTIES (for methane)

BOILING POINT: -259 °F (-162 °C)
VAPOR PRESSURE: 40 atm. @ -187 °F (-86 °C)
VAPOR DENSITY (air = 1): 0.6
SPECIFIC GRAVITY (H₂O = 1): 0.4 @ -263 °F (-164 °C)
SOLUBILITY (H₂O): 3.5%

10. STABILITY and REACTIVITY (rev. Aug-94)

STABILITY: Stable. Hazardous polymerization will not occur.

CONDITIONS TO AVOID and INCOMPATIBLE MATERIALS

Keep away from strong oxidizers, ignition sources and heat.

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke).

11. TOXICOLOGICAL PROPERTIES (rev. Aug-98; Tox-98)

ACUTE TOXICITY

Methane and ethane, the main components of natural gas, are considered practically inert in terms of physiological effects. At high concentrations these materials act as simple asphyxiants and may cause death due to lack of oxygen.

CARCINOGENICITY

OSHA: NO IARC: NO NTP: NO ACGIH: NO

12. ECOLOGICAL INFORMATION (rev. Aug-98)

This product is expected to exist entirely in the vapor phase in ambient air.

13. DISPOSAL CONSIDERATIONS (rev. Aug-98)

Consult federal, state and local waste regulations to determine appropriate disposal methods.

14. TRANSPORTATION INFORMATION (rev. Aug-98)

PROPER SHIPPING NAME: NATURAL GAS, COMPRESSED (*with high methane content*)
HAZARD CLASS: 2.1
DOT IDENTIFICATION NUMBER: UN 1971
DOT SHIPPING LABEL: FLAMMABLE GAS

15. REGULATORY INFORMATION (rev. Aug-98)

U.S. FEDERAL, STATE, and LOCAL REGULATORY INFORMATION

This product and its constituents listed herein are on the EPA TSCA Inventory. Any spill or uncontrolled release of this product, including any substantial threat of release, may be subject to federal, state and/or local reporting requirements. This product and/or its constituents may also be subject to other regulations at the state and/or local level. Consult those regulations applicable to your facility/operation.

AMERADA HESS CORPORATION

MATERIAL SAFETY DATA SHEET

NATURAL GAS (odorized)

MSDS No. 8010

CERCLA SECTION 103 and SARA SECTION 304 (RELEASE TO THE ENVIRONMENT)

This product does not contain any chemicals subject to the reporting requirements of CERCLA Section 103 or SARA 304. In addition, the CERCLA definition of hazardous substances contains a "petroleum exclusion" clause which exempts natural gas and synthetic gas usable for fuel and any indigenous components of such from the CERCLA Section 103 reporting requirements.

SARA SECTION 311/312 - HAZARD CLASSES

<u>ACUTE HEALTH</u>	<u>CHRONIC HEALTH</u>	<u>FIRE</u>	<u>SUDDEN RELEASE OF PRESSURE</u>	<u>REACTIVE</u>
--	--	X	X	--

SARA SECTION 313 - SUPPLIER NOTIFICATION

This product does not contain any chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372.

CANADIAN REGULATORY INFORMATION

Class A (Compressed Gas) Class B, Division 1 (Flammable Gas)

16. OTHER INFORMATION (rev. Feb-00)

NFPA® 704 HAZARD RATING

HEALTH:	1	Slight
FIRE:	4	Extreme
REACTIVITY:	0	Negligible

HMIS® HAZARD RATING

HEALTH:	1	Slight
FIRE:	4	Severe
REACTIVITY:	0	Minimal

SUPERSEDES MSDS DATED: 08/12/98

ABBREVIATIONS:

AP = Approximately < = Less than > = Greater than
 N/A = Not Applicable N/D = Not Determined ppm = parts per million

ACRONYMS:

ACGIH American Conference of Governmental Industrial Hygienists	OPA Oil Pollution Act of 1990
AIHA American Industrial Hygiene Association	OSHA U.S. Occupational Safety & Health Administration
ANSI American National Standards Institute (212)642-4900	PEL Permissible Exposure Limit (OSHA)
API American Petroleum Institute (202)682-8000	RCRA Resource Conservation and Recovery Act
CERCLA Comprehensive Emergency Response, Compensation, and Liability Act	REL Recommended Exposure Limit (NIOSH)
DOT U.S. Department of Transportation [General info: (800)467-4922]	SARA Superfund Amendments and Reauthorization Act of 1986 Title III
EPA U.S. Environmental Protection Agency	SCBA Self-Contained Breathing Apparatus
HMIS Hazardous Materials Information System	SPCC Spill Prevention, Control, and Countermeasures
IARC International Agency For Research On Cancer	STEL Short-Term Exposure Limit (generally 15 minutes)
MSHA Mine Safety and Health Administration	TLV Threshold Limit Value (ACGIH)
NFPA National Fire Protection Association (617)770-3000	TSCA Toxic Substances Control Act
NIOSH National Institute of Occupational Safety and Health	TWA Time Weighted Average (8 hr.)
NOIC ACGIH TLV Notice of Intended Change	WEEL Workplace Environmental Exposure Level (AIHA)
NTP National Toxicology Program	WHMIS Canadian Workplace Hazardous Materials Information System

AMERADAHESSE CORPORATION

MATERIAL SAFETY DATA SHEET

NATURAL GAS (odorized)

MSDS No. 8010

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

Information presented herein has been compiled from sources considered to be dependable, and is accurate and reliable to the best of our knowledge and belief, but is not guaranteed to be so. Since conditions of use are beyond our control, we make no warranties, expressed or implied, except those that may be contained in our written contract of sale or acknowledgment.

Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material, even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in their use of the material.



MATERIAL SAFETY DATA SHEET

SECTION 1 CHEMICAL PRODUCTS & COMPANY IDENTIFICATION

PG&E NGL Marketing, L.P.
Safety Dept.
1020 NE Loop 410
Suite 700
San Antonio, TX 78209
210-528-2000

FOR EMERGENCY SOURCE INFORMATION
CHEMTREC: 800-424-9300 / 202-483-7616

SUBSTANCE: Natural Gas
TRADE NAMES/SYNONYMS: Methane, sewer gas, mine gas, swamp gas
CHEMICAL FAMILY: Alkane
CAS NUMBER: 74-82-8

CREATED BY: David G. Sarvadi, JD, CIH
Keller and Heckman, LLP
CREATION DATE: February 15, 1999
REVISION DATE: 10/17/2002

SECTION 2 COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT*	PERCENTAGE	CAS NUMBER	EXPOSURE LIMITS	
			OSHA PEL	ACGIH TLV
Methane		74-82-8	None	Simple Asphyxiant
Ethane		74-84-0	None	Simple Asphyxiant
Isobutane		75-28-5	None	None
Normal Butane		106-97-8	800 ppm	800 ppm
Isopentane		78-78-4	None	None
Propane		74-98-6	1000 ppm	Simple Asphyxiant

*Percentages of ingredients may vary widely with source, process and location. Methane is the principal ingredient.

SECTION 3 HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

SIMPLE ASPHYXIAN: Displaces oxygen in air.

POTENTIAL HEALTH EFFECTS FROM:

INHALATION: Overexposure may cause weakness, headache, confusion, blurred vision, drowsiness, nausea, vomiting, and nervous system effects such as dizziness, slurred speech, flushed face, unconsciousness, or convulsions. High concentrations, usually in excess of 10% may sensitize the heart and lead to fatal cardiac arrhythmia.

SKIN CONTACT: Irritation. Direct contact with liquefied product may result in burns or frostbite.

PG&E NGL Marketing, L.P. is not the same company as Pacific Gas and Electric Company, the utility. PG&E NGL Marketing, L.P. is not regulated by the California Public Utilities Commission, and you do not have to buy PG&E NGL Marketing, L.P.'s products in order to continue to receive quality regulated services from the utility.

EYE CONTACT: Irritation. Direct contact with liquefied product may result in burns or frostbite.

INGESTION: None.

ADDITIONAL DATA: (Note to Physicians) Due to increased risk of eliciting cardiac dysrhythmias, catecholamine drugs, such as epinephrine, should be used with special caution in situations of emergency life support. Arrhythmias have been reported in animals exposed to high concentrations and given epinephrine. Providers are urged to contact a Regional Poison Center at 1-800-222-1222.

CARCINOGEN STATUS:

OSHA: None.

NTP: None.

IARC: None.

SECTION 4 FIRST AID MEASURES

INHALATION: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if necessary.

SKIN CONTACT: Flush area with tepid water. Do not use hot water. Do not rub affected area. If frostbite has occurred, get medical attention.

EYE CONTACT: Flush with tepid water for at least 15 minutes. Get medical attention.

INGESTION: Not expected to occur.

SECTION 5 FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARD: Vapors released from a spill may create an explosive atmosphere. Methane vapors or gases may travel considerable distances to ignition source and flash back. Do not enter a vapor cloud due to potential for flash fire. Containers of Methane may rupture violently if exposed to high heat or flame.

EXTINGUISHING MEDIA: Dry chemical or carbon dioxide. For large fire, use water spray to keep fire-exposed containers cool and disperse gas or vapor.

FIREFIGHTING: For fighting fires in buildings and confined spaces, firefighters must use self-contained breathing apparatus. If gas has ignited, do not attempt to extinguish. Stop gas flow and allow to burn out. Extinguishing normal Methane fire will permit accumulations of an explosive concentration of vapor and potential for explosion or re-flash. Use water spray to cool exposed area.

FLASH POINT: Below ambient or approximately -258° F (-120° C)

FLAMMABLE LIMITS IN AIR (% by Volume): LEL 3.6-5.0; UEL 12-15.0

FLAMMABILITY CLASS (OSHA): None.

HAZARDOUS COMBUSTION PRODUCTS: A thermal decomposition product from incomplete combustion (pyrolysis) includes carbon monoxide. Normal combustion forms carbon dioxide.

SECTION 6 ACCIDENTAL RELEASE MEASURES

OCCUPATIONAL SPILL: Remove all sources of ignition and evacuate all non-emergency personnel. Ventilate area and use self-contained breathing apparatus. Keep upwind of leak. Maintain evacuation until material has evaporated. Equipment used for spill cleanup must be explosion proof and suitable for flammable liquid and vapor. Vapors released from the spill may create an explosive atmosphere.

SECTION 7 HANDLING AND STORAGE

SAFE HANDLING

1. Consult a safety professional to assist in safe site-specific handling of gas cylinders.
2. Store in accordance with National Fire Protection Association recommendations.
3. Cylinders are transported with a suitable hand-truck. Do not drag, slide, or roll cylinders.
4. Keep the valve protection cap (where provided) tightly secured until the cylinder is ready for use.
5. Use designated CGQ fittings and other support equipment (threaded: for gas withdrawal CGA 510, liquid withdrawal CGA 555).
6. Leak check system with leak detection solution, never with flame.
7. Immediately contact the supplier if there are any difficulties associated with operating the cylinder valve.
8. Use an adjustable strap wrench to remove overly tight or rusted caps.
9. Be aware of any signs of dizziness or fatigue; exposures to fatal concentrations of propane could occur without any significant warning symptoms.

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IMPROPER HANDLING

1. Never tamper with pressure relief devices in valves and cylinders.
2. Do not heat cylinder to increase the discharge rate of the product from the cylinder.
3. Do not use oils or grease on gas-handling fittings or equipment.
4. Do not "crack" valve open before connecting it, since self-ignition may occur.
5. Never strike an arc on a compressed gas cylinder or cylinder part of an electric circuit.

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SAFE STORAGE

1. Store in accordance with National Fire Protection Association recommendations listed in NFPA 58.
2. Cylinders should be stored in dry, well-ventilated areas away from sources of heat, ignition and direct sunlight. The storage area should be clear of materials that can burn.
3. The temperature where cylinders are stored should not exceed 52 deg. C (125 deg. F).
4. Cylinders should be stored upright with valve-protection cap in place and firmly secured to prevent falling or being knocked over.
5. Cylinders stored in the open should be protected against extremes of weather and from the dampness of the ground to prevent rusting.

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6. Containers should be stored away from heavy traffic areas and emergency exits. Containers should be stored away from process and production areas, from elevators, building and room exits, or main aisles leading to exits.
7. Isobutane gas cylinders should be separated from oxygen cylinders, or other oxidizers, by minimum distance of 20 ft., or by a barrier of non-combustible material at least 5 ft. high, having a fire-resistance rating of at least 30 minutes.
8. Storage areas must meet national electrical codes for class 1 hazardous areas. "No smoking or open flames" signs need to be displayed in storage or use areas.
9. Installation of leak detection and alarm for storage and use areas should be considered.
10. Appropriate extinguishing equipment needs to be in the storage area (i.e., sprinkler system, portable fire extinguishers).
11. The smallest amount of natural gas on-site as is necessary. Full and empty cylinders should be segregated. To prevent containers from being stored for long periods of time, use a first-in, first-out inventory system.
12. Explosion-proof equipment, non-sparking ventilation systems, and appropriate electrical systems should be used. Electrical equipment used in gas-handling operations or located in storage areas should be non-sparking or explosion proof.
13. Use a check valve in the discharge line to prevent hazardous backflow.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE LIMITS: See Section 2.

VENTILATION: Use only non-sparking, explosion proof, totally enclosed ventilation systems.

EYE PROTECTION: Face shield and chemical goggles should be used when changing valves, hoses etc. Full facepiece where respiratory protection is required.

EMERGENCY WASH FACILITIES: Tepid water for washing affected skin and/or eyes should be available.

SPECIAL PROTECTIVE CLOTHING: If there is the potential for skin contact with liquid product, thermally protective, impervious clothing should be used to protect against frostbite.

GLOVES: Should be used to prevent frostbite from exposure to liquid product.

RESPIRATOR: Use NIOSH-approved air-supplied respirator or self-contained breathing apparatus.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

DESCRIPTION: Colorless, odorless gas (liquid under pressure). Product sold as fuel may contain mercaptan odorant.

MOLECULAR FORMULA: C H₄

BOILING POINT: -258.7° F (-161.5° C)

VAPOR PRESSURE: 40 mmHg at -86.3° C

VAPOR DENSITY: 0.55

VOLATILE COMPONENTS: 100% (by volume)

SPECIFIC GRAVITY: 0.42 at 25° C

WATER SOLUBILITY: Soluble. For further technical information, contact your marketing representative.

SECTION 10 STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable.

CONDITIONS TO AVOID: Heat, sparks, and flames.

INCOMPATIBILITIES: Strong oxidizers.

HAZARDOUS DECOMPOSITION: A thermal decomposition product from incomplete combustion (pyrolysis) includes carbon monoxide. Normal combustion forms carbon dioxide.

POLYMERIZATION: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGY INFORMATION

CARCINOGEN STATUS: None.

ANIMAL DATA: None.

SECTION 12 ECOLOGICAL INFORMATION

ACUTE AQUATIC TOXICITY: No data available.

DEGRADABILITY: No data available.

BIOCONCENTRATION FACTOR (BCF): No data available.

OCTANOL/WATER PARTITION COEFFICIENT: No data available.

SECTION 13 DISPOSAL INFORMATION

Observe all applicable Federal, State/Provincial and local regulations when treating, storing or disposing of this substance. Allow to evaporate or disperse leaks in air, making sure gas/vapor is dissipated below lower explosive limit.

If the material is to be disposed of as a compressed gas (*i.e.*, in cylinders), it must be managed as a RCRA ignitable hazardous waste.

SECTION 14 TRANSPORTATION INFORMATION

UN Number: UN 1971

D.O.T. Proper Shipping Name: Methane, compressed or Natural gas, compressed (with high methane content)

D.O.T. Hazard Classification: 2.1

D.O.T. Label (s): Flammable gas

D.O.T. Placard: Flammable gas

ICAO Proper Shipping Name: Methane gas, compressed

ICAO Label: Gas Flammable

IMO Proper Shipping Name: Methane gas, compressed

IMO Label: Flammable Gas

ICAO/IMO Hazard Classification: 2.1
Subsidiary Risk: None

SECTION 15 REGULATORY INFORMATION

US Federal Regulations:

Clean Air Act:

ODS: This product neither contains, nor was manufactured with a Class I or Class II ozone depleting substance (ODS). We have relied on our suppliers' labeling of their products in making this determination.

TSCA STATUS: All components are listed on Inventory of Chemical Substances and comply with TSCA.

CERCLA SECTION 103 (40 C.F.R. § 302.4): Not applicable. The material is covered by the CERCLA petroleum exclusion.

SARA SECTION 302 (40 C.F.R. § 355.30): None.

SARA SECTION 304 (40 C.F.R. § 355.40): None.

SARA (EPCRA) SECTION 313 (40 C.F.R. § 372.65): None.

SARA HAZARD CATEGORIES, SARA SECTIONS 311/312 (40 C.F.R. § 370.21) ACUTE HAZARD: Yes.

CHRONIC HAZARD: No.

FIRE HAZARD: Yes.

REACTIVITY HAZARD: No.

SUDDEN RELEASE HAZARD: Yes.

OSHA PROCESS SAFETY (29 C.F.R. § 1910.119): None, if used solely for workplace consumption as a fuel and fuel is not part of a process containing another highly hazardous chemical.

OSHA HAZARD COMMUNICATION (29 C.F.R. § 1910.1200): This material is hazardous as defined in the standard.

CONEG: Coalition of Northeastern Governors: This product fully complies with all CONEG legislation restricting lead, mercury, cadmium, and hexavalent chromium.

STATE REPORTING REQUIREMENTS:

CALIFORNIA PROPOSITION 65: The California Safe Drinking Water and Toxic Enforcement Act of 1986. This product, as supplied for its intended use, contains no substances present at any level that are, under the Statute, characterized as known to the State of California to cause cancer or to be a reproductive toxicant.

NEW JERSEY: Methane is on the Right to Know Hazardous Substance List as a Special Health Hazard.

SECTION 16 OTHER

DISCLAIMER OF WARRANTY

Information given herein is offered in good faith as accurate, but without guarantee. Conditions of use are beyond our control. Conditions of use and suitability of the product for particular uses are beyond our control; all risks of use of the product are therefore

assumed by the user, and WE EXPRESSLY DISCLAIM ALL WARRANTIES OF EVERY KIND AND NATURE, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE USE OR SUITABILITY OF THE PRODUCT. Nothing is intended as a recommendation for uses, which infringe valid patents, or as extending license under valid patents. Appropriate warnings and safe-handling procedures should be provided to handlers and users. Alteration of this document is strictly prohibited. Except to the extent required by law, republication or transmission of this document, in whole or in part, is not permitted. PG&E NGL Marketing, L.P. assumes no responsibility for accuracy of information unless the document is the most current available from an official PG&E NGL Marketing, L.P. distribution system. PG&E NGL Marketing, L.P. neither represents nor warrants that the format, content or product formulas contained in this document comply with the laws of any other country except in the United States of America.

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uniongas

A Duke Energy Company

MATERIAL SAFETY DATA SHEET

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

As required by law, this pamphlet is provided to update your health and safety information about Natural Gas. If you have questions or concerns about the WHMIS legislation, please contact your local Ministry of Labour office. If you have questions or concerns about this Natural Gas Material Safety Data Sheet, please contact Environment, Health & Safety at 1-800-571-8446 - ext. 2333.

Section 1		MATERIAL IDENTIFICATION AND USE	
Material Name/Identifier:		NATURAL GAS	
Supplier:	UNION GAS LIMITED 50 Keil Drive North Chatham, Ontario, N7M 5M1	Emergency Telephone Numbers:	PROVINCE WIDE – 1 877 969 0999
Chemical Name:	Methane	Chemical Family:	Simple Hydrocarbons
Material Use:	Primarily a heating fuel-domestic and industrial	Trade Names & Synonyms:	Methane Natural Gas (with high methane content)
Regulatory Classification:			
WHMIS:	Class A, - Compressed Gas Class B, Division 1 - Flammable Gas	NFPA/HMIS Rating:	Health 1/1 Flammability 4/4 Reactivity 0/0
TDG:	Shipping Name - Natural Gas, Compressed (with high methane content)		
UN/PIN:	1971		
Class:	2.1		

Section 2		HAZARDOUS INGREDIENTS		
Hazardous Ingredients	Approx. Concern. %	C.A.S. Number	Exposure Limits	LD50 / LC 50 Specify Species and Route
Natural Gas (Predominantly Methane)	100%	8006-14-2	Simple Asphyxiant	Based on Oxygen Displacement (as methane)

Section 3 PHYSICAL DATA			
Physical State Gas	Odour and Appearance Colourless, Odourless Gas (mercaptan odour added)		Odour Threshold (ppm) Mercaptan - 1 ppb
Specific Gravity Not Applicable	Vapour Pressure Not Applicable	Vapour Density (Air = 1) 0.53 - 0.7 (as methane)	Evaporation Rate Not Applicable
Boiling Point (°C) -161.4 °C (as methane)	Freezing Point (°C) -182.6 °C (as methane)	Ph Not Applicable	Coef. of Water/Oil Dist. Not Applicable

Section 4 FIRE AND EXPLOSION HAZARDS			
Flammability – Yes	If yes, under which conditions? Natural gas can present an extreme fire hazard when mixed in appropriate concentrations with air in the presence of a viable ignition source.		
Means of Extinction –	Dry Chemical, Carbon Dioxide (CO ₂), or Dry Chemical, Carbon Dioxide, foam, or water fog <i>Note: Do Not extinguish a fire involving natural gas unless the flow of gas can be stopped, otherwise explosive gas-air mixture could be formed creating a far more dangerous environment than the original fire.</i>		
Flash Point (°C) and Method Not Applicable	Upper Explosion Limit 16.0% (estimate)	Lower Explosion Limit 4.0% (estimate)	
Ignition Temperature (°C) Approximately 593°	Hazardous Combustion Products CO ₂ , CO, NIX SO ₂	Explosion Data/Sensitivity to Mechanical Impact Not Applicable	
Rate of Burning Depends on degree of confinement and concentration in air	Explosive Power	Sensitivity to Static Discharge Yes (Low)	

Section 5 REACTIVITY DATA	
Chemical Stability – Yes	If no, under which conditions?
Incompatibility with other substances – Yes	If so, which ones? Avoid oxidizers such as air, oxygen, chlorine, oxygen fluoride, bromine pentafluoride, etc. <i>Note: Natural gas ignites spontaneously when mixed with chlorine dioxides.</i>
Reactivity and under what conditions?	When appropriate concentrations of natural gas are mixed with oxidizing agents in the presence of a viable ignition source, an uncontrolled explosive reaction can occur.
Hazardous Decomposition Products	CO ₂ - trace amounts of oxides of sulphur and nitrogen (SO ₂ and NIX), CO - if starved of oxygen during combustion
Hazardous Polymerization?	Will not occur.

Section 6		TOXICOLOGICAL PROPERTIES	
Route of Entry –	Inhalation Acute		
Effects of Acute Exposure to Product –	Natural gas can act as a simple asphyxiant by displacing oxygen. Asphyxiation symptoms include headaches, rapid respiration, nausea, CNS depression, disorientation, unconsciousness, coma and death.		
Effects of Chronic Exposure to Product –	None Reported		
LD50 (Specify Species & Route) Not Applicable	Irritancy None Reported	Exposure Limits Based on Oxygen Displacement	
LC50 (Specify Species & Route) Not Applicable	Sensitization None Reported	Synergistic Materials Other Asphyxiants	
Toxic Effects –	None reported with respect to: <input type="checkbox"/> Carcinogenicity <input type="checkbox"/> Mutagenicity <input type="checkbox"/> Reproductive Toxicity <input type="checkbox"/> Teratogenicity		
General –	Simple asphyxiant toxicity is based on availability of oxygen. The minimal oxygen content in air should be 18% under normal atmospheric condition (equivalent to a partial pressure (pO ₂) of 135 mm of Hg).		

Section 7		PREVENTATIVE MEASURES	
Personal Protective Equipment –	CSA/ASA Safety Equipment must be available/worn as required to protect ears, eyes, feet, hands, head, remaining body area. In IDLH environments, personal protective equipment must include a positive pressure, self contained breathing apparatus.		
Gloves (Specify) Not normally required	Respiratory (Specify) If engineering controls and work practices are not effective in controlling exposure to methane, then wear suitable respiratory protection.		
Eyes (Specify) Safety goggles not normally required	Footwear (Specify) Refer to Personal Protective Equipment		
Clothing (Specify) Non-sparking, flame-retardant when in areas where potential flash fires may occur.	Other (Specify) Appropriate hearing protection, goggles and clothing should be utilized when potential for direct contact with high pressure gas release exists.		
Engineering Controls (Specify) –	Use spark proof or intrinsically safe equipment when dealing with potentially explosive atmosphere. Adequate ventilation and adequate venting of possible combustion products are required.		
Leak and Spill Procedures –	Evacuate area if necessary. Have leak made safe. Eliminate ignition sources such as flames or electrical sparks. Ventilate areas.		
Waste Disposal –			
Handling Procedures and Equipment –	All equipment piping and handling must conform to legislative requirements of the Ontario Gas Utilization Code, 1996, Energy Act O.Reg.546/96, 157/97 and CAN-CGA-B149.1-M95, CSA.		
Storage Requirements –	Storage in either pressure vessels or underground well facilities must comply with all Ontario Legislation requirements outlined under the Energy Act, Boiler Pressure Vessels Act and Petroleum Resources Act.		
Special Shipping Information –	Natural gas when transported by pipeline governed by the law of a province is exempt from Transportation of Dangerous Goods Act.		

Section 8 FIRST AID MEASURES	
Skin	Abrasions – Clean with soap and water then bandage. Burns – Seek medical attention.
Eye	Flush with water to remove foreign objects. If irritation persists obtain medical assistance.
Inhalation	Remove victim from contaminated area to fresh air. Administer artificial respiration if required and seek medical assistance.
Ingestion	Not applicable.

Section 9 PREPARATION OF M.S.D.S.	
Additional Information and Comments:	The gas flammability hazard should be considered the primary risk factor since the lower explosive limit (LEL) would typically need to be exceeded before gas toxicity would become significant.
Sources Used:	Documentation of TLV's and BEI's (ACGIH); Handbook of Chemistry and Physics (CRC), 59th edition; Gas Engineers Handbook; North American Combustion Handbook; Canadian Centre for Occupational Health and Safety; Ontario Regulation 654/86; Merck Index 10th edition.
Reviewed By:	Marcia L. Simpson, SCS Occupational Health Consulting
Authorized By:	Greg Payne, Team Lead, Environment Health & Safety Services, Canada East
Phone Number:	Preparation Date:
519-352-3100 – ext. 4575	September 1, 2003

This MSDS may be found on our web site at www.uniongas.com.
Select *Natural Gas Info*, *Natural Gas Safety*, *Material Safety Data Sheet*.

CAUTION: Natural Gas is a complex mixture such that constituent composition may vary. The information contained herein is based on the information available at the indicated date of preparation but no warranty, expressed or implied, is made. Further, the information contained herein relates only to this product or material and may not be valid when used in combination with any other product or material in any process. If the product is not to be used for a purpose or under conditions which are normal or reasonably foreseeable, this information cannot be relied upon as complete or applicable. For greater certainty of information, specific uses of the product must be reviewed with the supplier.