

MATERIAL SAFETY DATA SHEET – LIQUEFIED NATURAL GAS (MSDS #582)



Revision Date: April 7, 2011

Supersedes Date: April 7, 2008

Section 1: PRODUCT AND COMPANY IDENTIFICATION

FortisBC
16705 Fraser Highway
Surrey, BC
V3S 2X7

Company Phone Number: (604) 592-7629

Emergency Phone Number: (604) 946-4818

Product Name: Liquefied Natural Gas

Material Use: Various

Manufacturer: FortisBC LNG Plant
7651 Hopcott Rd
Delta, BC
V4G 1B7

Supplier: FortisBC LNG Plant
7651 Hopcott Rd
Delta, BC
V4G 1B7

WHMIS Class: A – Compressed Gas;
B1 – Flammable and Combustible Material – Division 1 Flammable Gases

UN/PIN Number: 1972

TDG Classification: Class 2.1 Flammable Gases

Chemical Family: Hydrocarbon Liquid

Chemical Formula: CH₄ (methane)

Molecular Weight: 16.04 (methane)

CAS Number: 74-82-8

Trade Names / Synonyms: Liquefied Methane / LNG

Section 2: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Appearance/Odour: Odourless, colourless liquid. This product is not odourized.

Flammable: Very flammable after vapourization to gaseous phase.

Potential Health Effects: See Section 11 for more information

Potential Environmental Effects: See Section 12 for more information.

Likely Routes of Exposure: Eye and skin contact, acute inhalation

Acute - Eye, Skin and Inhalation: Liquid or cold gas contact with skin or eyes could cause freezing or severe cryogenic burns. After vapourization, contact with burning gas may cause burns. CNS depression and cardiac sensitization may occur at high gaseous concentrations approaching the lower flammability limit.

Chronic- Inhalation: None

Ingestion: None

Skin Adsorption: None

Section 3: FIRST AID MEASURES

Skin Contact: Cryogenic burns. Remove constricting clothing. Do not thaw too rapidly. Transport to hospital immediately.

Eye contact: Get medical attention immediately.

Inhalation: Move to fresh air. Give artificial respiration if breathing has stopped. Call a physician.

Ingestion: Unlikely route of exposure as this is a gas at normal room temperature and pressure.

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General Advise: Use extreme care in handling due to high flammability and risk of cryogenic burns.

Section 4: COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS #	% by Wt.	Exposure Limits ^{NOTE 1}
Methane	74-82-8	95	Simple asphyxiant
Ethane	74-84-0	3	Simple asphyxiant
Propane	74-98-6	1	Simple asphyxiant
Nitrogen	7727-37-9	1	Simple asphyxiant

NOTE 1. See Section 8 for additional exposure limit information for C₁ to C₄ Aliphatic Hydrocarbon Gases.

Section 5: FIRE FIGHTING MEASURES

Flammability:	Flammable gas
Suitable Extinguishing Media:	Dry Chemical (Purple-K). To suppress or contain, use water fog or high expansion foam.
Unsuitable Extinguishing Media:	Do not direct water spray directly at LNG pool; this will only increase rate of vapourization. Cold vapour is heavier than air and will not readily disperse until warmed up. High expansion foam may be used to help control the vapourization rate.
Products of Combustion:	Carbon dioxide and carbon monoxide
Protection of Firefighters:	Very flammable after vapourization to gaseous phase. Firefighters should wear self-contained breathing apparatus (SCBA) in case of oxygen deficient atmosphere. Use Combustible Gas Indicator to determine the extent of vapour cloud.
Sensitivity to Static Discharge:	Ignitable by static
Sensitivity to Mechanical Impact:	None
Explosive Power:	Not known

Section 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions:	Use personal protection recommended in Section 8.
Environmental Precautions:	Not applicable
Methods for Containment:	Evacuate area for 2000 foot (600 m) radius. Stay out of vapour cloud.
Methods for Clean-Up:	Wear all protective equipment recommended in Section 8. Eliminate source of ignition.
Other Information:	Allow to vapourize and disperse to atmosphere.

In case of an emergency and no response at LNG plant, call SERVICE CENTER: 1 (800) 663-9911.

Section 7: HANDLING AND STORAGE

Handling:	To be handled by trained personnel only, using equipment specifically designed for LNG, and following approved operating procedures.
Storage:	Store only in vessels designed for LNG storage, and follow approved operating procedures.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits: Simple asphyxiant - Maintain 19.5% oxygen level (below 19.5% oxygen is considered to be oxygen deficient).

Constituent	ACGIH (8-hour TWA)	WorkSafeBC (8-hour TWA)
Methane	1000 ppm	1000 ppm
Ethane	1000 ppm	1000 ppm

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Propane	1000 ppm	1000 ppm
Nitrogen	None listed	None listed

Personal Protection

Equipment:	Ensure use of proper PPE at all times when handling this product.
Eye/face:	Face shield with other eye protection (safety glasses)
Skin:	Insulated gloves, safety work boots, Nomex coveralls.
Respiratory:	Supplied air respiratory protection to be used (airline or self-contained breathing apparatus) in cases of oxygen deficient atmospheres
Other Considerations:	Use extreme care in handling due to high flammability and risk of cryogenic burns.
Engineering Controls:	Provide electrical ground for all parts of handling system. Provide adequate ventilation to maintain more than 19.5% oxygen, less than 1% methane (20% of the lower explosive limit). Use of CGI is mandatory since product is odourless.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Colour:	Colourless.
Odour:	Odourless
Odour Threshold (ppm):	Not available
Physical State:	Liquid.
pH:	Not applicable
Freezing Point (°C):	-182.5
Boiling Point (°C):	-161.5
Flash Point (°C):	-187.8
Evaporation Rate:	Rapid
Flammability (solid, gas):	Flammable gas
Lower Explosion Limit:	5% (by volume, gas phase)
Upper Explosion Limit:	15% (by volume, gas phase)
Vapour Pressure:	Container rating
Vapour Density:	>1 @ -112 degrees C (Air = 1)
Specific Gravity:	0.45 (water = 1)
Solubility in water (20°C):	24.4 parts per millions (wt)
Partition Coefficient:	Octanol/water - 1.09 LogK _{ow}
Auto-ignition Temperature:	537 °C (Gas Phase)
Percent Volatile (by volume):	99%
Density (g/ml):	0.45 at boiling point

Section 10: STABILITY AND REACTIVITY

Chemical Stability:	Yes
Compatible Materials:	Air, oxidizers, halides
Hazardous Decomposition Products:	None known
Reactivity (and Under What Conditions):	None known

Section 11: TOXICOLOGICAL INFORMATION

LD50:	Not available
LC50:	Not available
Acute Effects:	Liquid or cold gas contact with skin or eyes could cause freezing or severe cryogenic burns. After vapourization, contact with burning gas may cause burns. Inhalation produces weak depressant effects on the CNS at high gaseous concentrations approaching the lower flammability limit.
Chronic Effects:	Not available
Carcinogenicity:	Not considered carcinogenic by IARC, NTP, ACGIH or OSHA.
Reproductive Effects:	Not available
Teratogenicity:	Not available
Mutagenicity:	Not available

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Irritant: Not available
Sensitizer: Not available
Synergistic Effects: Not available

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity: Not applicable
Persistence/ Degradability: Not applicable
Bioaccumulation/ Accumulation: Not applicable

Section 13: DISPOSAL CONSIDERATIONS

Disposal: Allow to vapourize and disperse to the atmosphere.

Section 14: TRANSPORTATION INFORMATION

TDG Classification: 2.1 Flammable Gases
UN/PIN Number: 1972
Shipping Name: Methane, Refrigerated Liquid, or Natural Gas, Refrigerated Liquid with high methane content
Special Shipping Information: Transport only in shipping container designed for LNG and follow approved operating procedures.

Section 15: REGULATORY INFORMATION

DSL (Canada): This product is on the DSL list.
WHMIS Class: A – Compressed Gas;
B1 – Flammable and Combustible Material – Division 1 Flammable Gases

Section 16: OTHER INFORMATION

National Fire Protection Association (NFPA 704) Ratings:

Health	2	LEGEND	0 = minimal hazard
Flammability	4		1 = slight hazard
Instability	0		2 = moderate hazard
(For methane from NFPA 325)			3 = severe hazard
			4 = extreme hazard

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Additional Information and Comments: This MSDS has been revised and updated from the last revision date of April 7, 2008. All sections and the order that which they appear have been documented as per American National Standard – *For Hazardous Industrial Chemicals – Material Safety Data Sheets Preparation* (ANSI Z400.1-2004).

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Information Sources: Various