

Safety Data Sheet

acc. to OSHA HCS (29CFR 1910.1200) and WHMIS 2015 Regulations

Printing date: October 16, 2018

Revision: October 16, 2018

1 Identification

- **Product identifier**
- **Trade name:** Liquid Natural Gas (LNG)
- **CAS Number:**
8006-14-2
- **Other means of identification:** Liquid Natural Gas, dry; Natural Gas, refrigerated
- **Recommended use and restriction on use**
- **Recommended use:** Industrial uses.
- **Restrictions on use:** No relevant information available.
- **Details of the supplier of the Safety Data Sheet**
- **Manufacturer/Supplier:**
Williams, Inc.
One Williams Center
Tulsa, OK 74172
USA
855-945-5762 (Toll-Free)
ehs@williams.com
- **Emergency telephone number:**
CHEMTREC
1-800-424-9300 (US/Canada)
+01 703-527-3887 (International)

2 Hazard(s) identification

- **Classification of the substance or mixture**
Flam. Gas 1 H220 Extremely flammable gas.
Press. Gas H281 Contains refrigerated gas; may cause cryogenic burns or injury.
Simple Asphyxiant May displace oxygen and cause rapid suffocation.

- **Label elements**

- **GHS label elements**

The product is classified and labeled according to the Globally Harmonized System (GHS).

- **Hazard pictograms:**



GHS02 GHS04

- **Signal word:** Danger
- **Hazard statements:**
H220 Extremely flammable gas.
H281 Contains refrigerated gas; may cause cryogenic burns or injury.
May displace oxygen and cause rapid suffocation.
- **Precautionary statements:**
P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P282 Wear cold insulating gloves/face shield/eye protection.
P336+P315 Thaw frosted parts with lukewarm water. Do not rub affected area. Get immediate medical advice/attention.

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P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
 P381 Eliminate all ignition sources if safe to do so.
 P403 Store in a well-ventilated place.

• **Other hazards** There are no other hazards not otherwise classified that have been identified.

3 Composition/information on ingredients

• **Chemical characterization: Substances**

• **CAS No. Description**

8006-14-2 Natural Gas

• **Components:**

74-82-8	Methane	Flam. Gas 1, H220 Press. Gas, H280 Simple Asphyxiant	95-99%
74-84-0	Ethane	Flam. Gas 1, H220 Press. Gas, H280 Simple Asphyxiant	0.5-4%
74-98-6	Propane	Flam. Gas 1, H220 Press. Gas, H280 Simple Asphyxiant	0.1-1%

• **Additional information:**

For the listed ingredient(s), the identity and/or exact percentage(s) are being withheld as a trade secret.
 For the wording of the listed Hazard Statements, refer to section 16.

4 First-aid measures

• **Description of first aid measures**

• **After inhalation:**

Supply fresh air.

Provide oxygen treatment if affected person has difficulty breathing.

If experiencing respiratory symptoms: Call a poison center/doctor.

• **After skin contact:**

In cases of frostbite from liquefied gas or from high-pressure systems, rinse with plenty of water. Do not remove clothing.

• **After eye contact:**

Remove contact lenses if worn.

Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

• **After swallowing:** Unlikely route of exposure.

• **Most important symptoms and effects, both acute and delayed:**

Dizziness

Coughing

Frostbite from liquefied gas or high-pressure systems.

Disorientation

• **Danger:** May displace oxygen and cause rapid suffocation.

• **Indication of any immediate medical attention and special treatment needed:**

If necessary oxygen respiration treatment.

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5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:**
 - Foam
 - Water fog / haze
 - Gaseous extinguishing agents
 - Carbon dioxide
- **For safety reasons unsuitable extinguishing agents:** Water stream.
- **Special hazards arising from the substance or mixture**
 - Danger of receptacles bursting because of high vapor pressure if heated.
 - Extremely flammable gas.
- **Advice for firefighters**
- **Protective equipment:**
 - Wear self-contained respiratory protective device.
 - Wear fully protective suit.
- **Additional information:**
 - Eliminate all ignition sources if safe to do so.
 - In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.
 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
 - Wear protective equipment. Keep unprotected persons away.
 - Wear cold insulating gloves/face shield/eye protection.
 - Ensure adequate ventilation.
 - Keep away from ignition sources.
 - Take precautionary measures against static discharge.
 - Use only non-sparking tools.
 - Protect from heat.
 - For large spills, use respiratory protective device against the effects of fumes/dust/aerosol.
- **Environmental precautions** No special measures required.
- **Methods and material for containment and cleaning up** Allow to evaporate.
- **Reference to other sections**
 - See Section 7 for information on safe handling.
 - See Section 8 for information on personal protection equipment.
 - See Section 13 for disposal information.

7 Handling and storage

- **Handling**
- **Precautions for safe handling:** Use enclosed means of conveyance.
- **Information about protection against explosions and fires:**
 - Keep ignition sources away - Do not smoke.
 - Protect against electrostatic charges.
 - Ground/bond container and receiving equipment.

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Emergency cooling must be available in case of nearby fire.
Flammable gas-air mixtures may be formed in empty containers/receptacles.

- **Conditions for safe storage, including any incompatibilities**
- **Requirements to be met by storerooms and receptacles:**
Avoid storage near extreme heat, ignition sources or open flame.
- **Information about storage in one common storage facility:** Store away from oxidizing agents.
- **Further information about storage conditions:**
Store in a cool place. Heat will increase pressure and may lead to the receptacle bursting.
- **Specific end use(s)** No relevant information available.

8 Exposure controls/personal protection

- **Control parameters**

- **Components with limit values that require monitoring at the workplace:**

74-82-8 Methane

TLV (USA)	refer to App. F in TLVs and BEIs book; NIC-D, EX
EL (Canada)	Simple asphyxiant, EX
EV (Canada)	Long-term value: 1,000 ppm revoked as of 01/01/18
LMPE (Mexico)	Long-term value: 1000 ppm

74-84-0 Ethane

TLV (USA)	Refer to Appendix F in TLVs & BEIs book; (D, EX)
EL (Canada)	simple asphyxiant; EX
EV (Canada)	Long-term value: 1,000 ppm revoked as of 01/01/18
LMPE (Mexico)	Long-term value: 1000 ppm

74-98-6 Propane

PEL (USA)	Long-term value: 1800 mg/m ³ , 1000 ppm
REL (USA)	Long-term value: 1800 mg/m ³ , 1000 ppm
TLV (USA)	refer to Appendix F in TLVs & BEIs book; D, EX
EL (Canada)	Simple asphyxiant; EX
EV (Canada)	Long-term value: 1,000 ppm revoked as of 01/01/18
LMPE (Mexico)	Long-term value: 1000 ppm

8006-14-2 Natural Gas

TLV (USA)	refer to App. F in TLVs and BEIs book; NIC-D, EX
EL (Canada)	Simple asphyxiant, EX
EV (Canada)	Long-term value: 1,000 ppm revoked as of 01/01/18
LMPE (Mexico)	Long-term value: 1000 ppm (As Methane)

- **Exposure controls**

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- **General protective and hygienic measures:**
The usual precautionary measures for handling chemicals should be followed.
Keep away from foodstuffs, beverages and feed.
Wash hands before breaks and at the end of work.
- **Engineering controls:** Provide adequate ventilation.
- **Breathing equipment:**
Not required under normal conditions of use.



Self-contained respiratory protective device should be used in case of large spills or leaks.

- **Protection of hands:**
Wear gloves for protection against thermal and mechanical hazards according to OSHA and NIOSH rules.
Wear cold insulating gloves/face shield/eye protection.
- **Eye protection:**



Safety glasses

Follow relevant national guidelines concerning the use of protective eyewear.

- **Body protection:**
Wear appropriate protective clothing.
Wear cold insulating gloves/face shield/eye protection.
- **Limitation and supervision of exposure into the environment**
No relevant information available.
- **Risk management measures** No relevant information available.

9 Physical and chemical properties

Information on basic physical and chemical properties

• Appearance:	
Form:	Refrigerated Gas
Color:	Colorless
• Odor:	Odorless
• Odor threshold:	Not determined.
• pH-value:	Not determined.
• Melting point/Melting range:	-183 °C (-297.4 °F)
• Boiling point/Boiling range:	-162 °C (-259.6 °F)
• Flash point:	-232 °C (-385.6 °F)
• Flammability (solid, gaseous):	Extremely flammable gas.
• Auto-ignition temperature:	537 °C (998.6 °F)
• Decomposition temperature:	Not determined.
• Danger of explosion:	Product is not explosive. However, formation of explosive air/vapor mixtures are possible.
• Explosion limits	

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Lower:	4.5 Vol %
Upper:	14 Vol %
· Oxidizing properties:	Not determined.
· Vapor pressure at -4.6 °C (23.7 °F):	29736 mmHg (575 psi)
· Density:	
Relative density at -162 °C (-259.6 °F):	0.45
Vapor density:	Not determined.
Relative vapor density at 20 °C (68 °F):	0.6-1.5 (air = 1)
Evaporation rate:	Not applicable.
· Solubility in / Miscibility with Water:	Not miscible or difficult to mix.
· Partition coefficient (n-octanol/water):	Not determined.
· Viscosity	
Dynamic:	Not determined.
Kinematic:	Not determined.
· Other information	No relevant information available.

10 Stability and reactivity

- **Reactivity:** No data available for self-reactivity.
- **Chemical stability:** Stable under normal temperatures and pressures.
- **Thermal decomposition / conditions to be avoided:**
Contains refrigerated gas; may cause cryogenic burns or injury.
Danger of receptacles bursting because of high vapor pressure if heated.
- **Possibility of hazardous reactions**
Extremely flammable gas.
Reacts with halogenated compounds.
Develops readily flammable gases / fumes.
Reacts with oxidizing agents.
Can form explosive mixtures in air if heated above flash point and/or when sprayed or atomized.
Hazardous gases may be released if heated above the decomposition point.
- **Conditions to avoid**
Excessive heat.
Keep ignition sources away - Do not smoke.
- **Incompatible materials**
Oxidizers
Halogenated compounds.
- **Hazardous decomposition products**
Under fire conditions only:
Carbon monoxide and carbon dioxide

11 Toxicological information

- **Information on toxicological effects**

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- **Acute toxicity:** Based on available data, the classification criteria are not met.
- **LD/LC50 values that are relevant for classification:** None.
- **Primary irritant effect:**
- **On the skin:** Based on available data, the classification criteria are not met.
- **On the eye:** Based on available data, the classification criteria are not met.
- **Sensitization:** Based on available data, the classification criteria are not met.

IARC (International Agency for Research on Cancer):

Substance is not listed.

NTP (National Toxicology Program):

Substance is not listed.

OSHA-Ca (Occupational Safety & Health Administration):

Substance is not listed.

Probable route(s) of exposure:

- Inhalation.
- Eye contact.
- Skin contact.

Acute effects (acute toxicity, irritation and corrosivity):

- May displace oxygen and cause rapid suffocation.
- Frostbite

- **Germ cell mutagenicity:** Based on available data, the classification criteria are not met.
- **Carcinogenicity:** Based on available data, the classification criteria are not met.
- **Reproductive toxicity:** Based on available data, the classification criteria are not met.
- **STOT-single exposure:** Based on available data, the classification criteria are not met.
- **STOT-repeated exposure:** Based on available data, the classification criteria are not met.
- **Aspiration hazard:** Based on available data, the classification criteria are not met.

12 Ecological information

- **Toxicity**
- **Aquatic toxicity** No relevant information available.
- **Persistence and degradability** No relevant information available.
- **Bioaccumulative potential:** No relevant information available.
- **Mobility in soil:** No relevant information available.
- **Additional ecological information**
- **General notes:** Not known to be hazardous to water.
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **Other adverse effects** No relevant information available.

13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:**
Contact waste processors for recycling information.
The user of this material has the responsibility to dispose of unused material, residues and containers in

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compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes.

- **Uncleaned packagings**
- **Recommendation:** Disposal must be made according to official regulations.

14 Transport information

<ul style="list-style-type: none"> · UN-Number · DOT, ADR, IMDG · IATA 	<p style="margin-left: 20px;">UN1972 FORBIDDEN</p>
<ul style="list-style-type: none"> · UN proper shipping name · DOT · ADR, IMDG · IATA 	<p style="margin-left: 20px;">Natural gas, refrigerated liquid NATURAL GAS, REFRIGERATED LIQUID FORBIDDEN</p>
<ul style="list-style-type: none"> · Transport hazard class(es) · DOT 	<div style="text-align: center; margin-bottom: 10px;">  </div> <p style="margin-left: 20px;">2.1</p>
<ul style="list-style-type: none"> · Class · Label 	<p style="margin-left: 20px;">2.1 2.1</p>
<ul style="list-style-type: none"> · ADR 	<div style="text-align: center; margin-bottom: 10px;">  </div> <p style="margin-left: 20px;">2.1 3F</p>
<ul style="list-style-type: none"> · Class · Label 	<p style="margin-left: 20px;">2.1 2.1</p>
<ul style="list-style-type: none"> · IMDG 	<div style="text-align: center; margin-bottom: 10px;">  </div> <p style="margin-left: 20px;">2.1</p>
<ul style="list-style-type: none"> · Class · Label 	<p style="margin-left: 20px;">2.1 2.1</p>
<ul style="list-style-type: none"> · IATA 	<p style="margin-left: 20px;">FORBIDDEN</p>
<ul style="list-style-type: none"> · Packing group 	<p style="margin-left: 20px;">This UN-number is not assigned a packing group.</p>
<ul style="list-style-type: none"> · Environmental hazards · Marine pollutant: 	<p style="margin-left: 20px;">No</p>
<ul style="list-style-type: none"> · Special precautions for user · Danger code (Kemler): · EMS Number: 	<p style="margin-left: 20px;">Not applicable. 21 F-D,S-U</p>

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- **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** Not applicable.

15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **United States (USA)**
- **SARA**

· **Section 302 (extremely hazardous substances):**

Substance is not listed.

· **Section 355 (extremely hazardous substances):**

Substance is not listed.

· **Section 313 (Specific toxic chemical listings):**

Substance is not listed.

· **TSCA (Toxic Substances Control Act)**

Substance is listed.

· **Proposition 65 (California)**

· **Chemicals known to cause cancer:**

Substance is not listed.

· **Chemicals known to cause developmental toxicity for females:**

Substance is not listed.

· **Chemicals known to cause developmental toxicity for males:**

Substance is not listed.

· **Chemicals known to cause developmental toxicity:**

Substance is not listed.

· **EPA (Environmental Protection Agency):**

Substance is not listed.

· **IARC (International Agency for Research on Cancer):**

Substance is not listed.

· **Canadian Domestic Substances List (DSL) (Substances not listed.):**

Substance is listed.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Abbreviations and acronyms:**

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

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IATA: International Air Transport Association
CAS: Chemical Abstracts Service (division of the American Chemical Society)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bio-accumulable, Toxic
vPvB: very Persistent and very Bioaccumulative
OSHA: Occupational Safety & Health Administration
Flam. Gas 1: Flammable gases – Category 1
Press. Gas: Gases under pressure – Compressed gas
Press. Gas: Gases under pressure – Refrigerated liquefied gas

Sources

Website, European Chemicals Agency (echa.europa.eu)
Website, US EPA Substance Registry Services (ofmpub.epa.gov/sorinternet/registry/substreg/home/overview/home.do)
Website, Chemical Abstracts Registry, American Chemical Society (www.cas.org)
Patty's Industrial Hygiene, 6th ed., Rose, Vernon, ed. ISBN: 978-0-470-07488-6
Casarett and Doull's Toxicology: The Basic Science of Poisons, 8th Ed., Klaasen, Curtis D., ed., ISBN: 978-0-07-176923-5.
Safety Data Sheets, Individual Manufacturers

SDS Prepared by:
ChemTel Inc.
1305 North Florida Avenue
Tampa, Florida USA 33602-2902
Toll Free North America 1-888-255-3924 Intl. +01 813-248-0573
Website: www.chemtelinc.com