1. PRODUCT AND COMPANY IDENTIFICATION

Product Code: 00016
Product Name: Methane
Refrigerated Liquid

Company Name: Gas Innovations
18005 E. Hwy 225
La Porte, TX 77571

Web site address: www.gasinnovations.com
Phone Number: +1 (281)471-2200
Emergency Contact: 3E (within United States) +1 (866)303-2640
Information: Infotrac (outside of United States) +1 (352)323-3500
Product Category: Refrigerated gas
Intended Use: Industrial Use
Synonyms: UN 1971 Methane Refrigerated Liquid.

2. HAZARDS IDENTIFICATION

Flammable Gases: **Category 1A**
Gas Under Pressure: **Refrigerated Liquefied gas**

Symbol:

GHS Signal Word: **Danger**

GHS Hazard Phrases:
H220 - Extremely flammable gas.
H280 - Contains gas under pressure; may explode if heated.
H261 - In contact with water releases flammable gases.

GHS Precaution Phrases:
P101 - If medical advice is needed, have a product container or label at hand.
P102 - Keep out of reach of children.
P202 - Do not handle until all safety precautions have been read and understood.
P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P282 - Wear cold insulating gloves/face shield/eye protection.

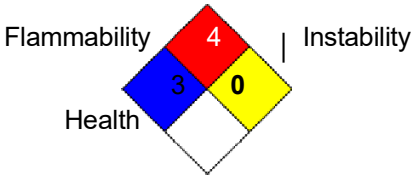
GHS Response Phrases:
P336 - Thaw frosted parts with lukewarm water. Do not rub affected areas.
P315 - Get immediate medical advice/attention.
P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 - Eliminate all ignition sources if safe to do so.

GHS Storage and Disposal Phrases:
P410 + P403 - Protect from sunlight. Store in a well-ventilated place.
P233 - Keep container tightly closed.
P241 - Use explosion-proof electrical, ventilating, lighting and all material-handling equipment.
P243 - Take action to prevent static discharges.

Additional Hazards Information
Use a back flow preventative device in the piping.
Do not open the valve until connected to equipment prepared for use. Close valve after each use and when empty.

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

Hazard Rating System:



NFPA: Special Hazard

Potential Health Effects (Acute and Chronic):

Inhalation: This material can act as a simple asphyxiant by displacement of air. Symptoms of asphyxia include headache, dizziness, rapid breathing, increased pulse, mood changes, tremors, cyanosis, muscular weakness, narcosis, numbness of the extremities, unconsciousness and death. The effects of asphyxiation may be more rapid during physical effort since oxygen consumption is increased.

Skin Contact: The vapors are not irritants, but direct contact of the eyes, skin with cold vapors or liquid may cause frostbite, burns, permanent ocular and skin lesions.

Eye Contact: The vapors are not irritants, but direct contact of the eyes, skin with cold vapors or liquid may cause frostbite, burns, permanent ocular and skin lesions.

Ingestion: Not a likely route of exposure. May be harmful if swallowed.

Medical Conditions Generally Aggravated by Exposure: People with pre-existing heart, lung or blood conditions may have an increased sensitivity to asphyxiation.

3. COMPOSITION/INFORMATION ON INGREDIENTS

CAS #	Hazardous Components (Chemical Name)	Concentration
74-82-8	Methane	>85%
7727-37-9	Nitrogen	<1%

4. FIRST AID MEASURES

Emergency and First Aid Procedures:

In Case of Inhalation: If breathing is difficult, remove victims to fresh air and keep at rest in a position comfortable for breathing. If breathing is difficult, give oxygen or administer artificial respiration. Get medical aid if irritation develops and persists.

In Case of Skin Contact: Liquefied gases may cause cryogenic burns or injury. Treat frostbitten skin by flushing or immersing affected areas in lukewarm water. Do not rub affected areas. Do not remove clothing that adheres due to freezing. After sensation has returned to the skin, keep skin warm, dry, and clean. Do not rub affected areas. Wash clothing before reuse. If blistering occurs, apply a sterile dressing. Seek immediate medical attention.

In Case of Eye Contact: For contact with the liquefied gas, remove contact lenses if present, hold eyes open and gently flush the affected eye(s) with lukewarm water. Get immediate medical advice/attention.

In Case of Ingestion: Not a likely route of exposure. In the unlikely event of ingestion, obtain medical attention immediately. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Signs and Symptoms of Exposure: Light hydrocarbon gases are simple asphyxiant and can cause anesthetic effects at high concentrations. Symptoms of overexposure, which are reversible if exposure is stopped, can include shortness of breath, drowsiness, headaches, confusion, decreased coordination, visual disturbances and vomiting. Continued exposure can lead to hypoxia, rapid breathing, numbness, unconsciousness and death. The signs of frostbite are a change in the color of the skin to grey or white, followed later by blisters. The skin may become inflamed and painful.

Note to Physician: Show this safety data sheet to the doctor in attendance. Epinephrine and other sympathomimetic

drugs may initiate cardiac arrhythmias in persons exposed to high concentrations of hydrocarbon solvents (e.g., in enclosed spaces or with deliberate abuse). The use of other drugs with less arrhythmogenic potential should be considered. If sympathomimetic drugs are administered, observe for the development of cardiac arrhythmias.

5. FIRE FIGHTING MEASURES

Flash Pt:	-136°C
Method Used:	Not Applicable
Explosive Limits:	Lower level: 5% (Volume in air) Upper-level EL: 15% (Volume in air)
Autoignition Pt:	482°C to 632°C
Suitable Extinguishing Media:	Dry chemical (Purple-K) and carbon dioxide are the most effective types of extinguishing media. To suppress or contain, use water fog or high expansion foam.
Unsuitable Extinguishing Media:	Water is not a suitable agent for fighting an Methane Refrigerated Liquid fire directly because it causes expansion of the fire by increasing the rate of vaporization of the liquid to gas.
Fire Fighting Instructions:	Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Flame-retardant clothing, gloves and proper eye protection need to be worn in any situation where there is the potential for Methane Refrigerated Liquid vapors to ignite accidentally. If safe to do so, try to remove ignition sources. Use non-sparking tools to shut off the gas. Do not try to extinguish the fire if the gas leak can't be stopped. If there is no risk to the surrounding area, let the fire burn itself out. If needed, use a combustible gas detector to establish a secure perimeter around the site. Spilled material may pool on the ground and flow toward lower points until the temperature rises above -100C (-148F). If the spill has not ignited, water spray can be used to direct flammable gas-air mixtures away from ignition sources. Methane Refrigerated Liquid vapors are heavier than air until the vapors reach -180F. During a significant spill the vapors generated may travel long distances to a distant ignition source.
Flammable Properties and Hazards:	Highly flammable, extremely cold liquid and gas. Forms explosive mixtures in air and with oxidizing agents. A Rapid Phase Transition (RPT) can occur when there is a significant difference in temperature between the Methane Refrigerated Liquid and a warmer liquid; this reaction can cause instantaneous vaporization of the Methane Refrigerated Liquid. The sudden increase in total volume occupied by the Methane Refrigerated Liquid may generate a shock wave (sudden generation of overpressure but without combustion).
Hazardous Combustion Products:	High temperatures and fire conditions can result in the formation of carbon monoxide and carbon dioxide, Fireball forms if gas is ignited immediately after release. Toxic gases, aldehydes, soot.

6. ACCIDENTAL RELEASE MEASURES

Protective Precautions, Protective Equipment and Emergency Procedures:	Use proper personal protective equipment as indicated in Section 8. Stop leaking without risk. No action shall be taken involving any personal risk or without suitable training.
Environmental Precautions:	Methane Refrigerated Liquid will not pollute natural resources such as ground water, soil, wetlands, streams or beaches. It vaporizes quickly and completely, and because it is lighter than air, it does not contain any pollutants from the spill. Prevent from entering sewers, basements and work pits, or any place where its accumulation can be dangerous.
Steps To Be Taken in Case Material Is Released or Spilled:	Remove all sources of ignition. Ensure adequate ventilation. Notify relevant authorities in accordance with applicable regulations. Recommended measures are based on the most likely spillage scenarios for this material; however local conditions and regulations may influence or limit the choice of appropriate actions to be taken.

7. HANDLING AND STORAGE

Precautions To Be Taken in Handling:

To be handled by trained personnel only, using equipment specifically designed for Methane Refrigerated Liquid and following approved standard operating procedures. Cold burns may occur during filling operations. Wear appropriate personal protective equipment (see section 8) and use good industrial hygiene. Gas can accumulate in confined spaces and limit available oxygen. Use only with adequate ventilation. Take precautionary measures against static discharge. Electrostatic charge may accumulate and create a hazardous condition when handling this material. To avoid fire, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Do not pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks or other sources of ignition. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Do not drag, drop, slide or roll cylinders. The uncontrolled release of a gas under pressure may cause physical harm. Use a suitable hand truck for cylinder movement.

Precautions To Be Taken in Storing:

Store only in containers compatible for Methane Refrigerated Liquid storage. Post area with proper signage such as no smoking, no open flames, personal protective equipment requirements and cryogenic hazard. Use spark-proof tools and explosion proof equipment. Keep away from heat, sparks and flame.

Other Precautions:

Liquid methane tanks are equipped with pressure relief devices. Venting vapors may obscure visibility. If venting or leaking methane catches fire, do not extinguish flames. Flammable vapors may spread from leak creating an explosive reignition hazard. Vapors can be ignited by pilot lights, other flames, smoke, sparks, heaters, electrical equipment, static discharge or other ignition sources at locations distant from product handling point. Explosive atmospheres may linger. Before entering areas, especially confined areas, check the atmosphere with an approved explosion meter. Never touch live electrical parts.

Avoid materials incompatible with cryogenic use; some metals such as carbon steel may fracture easily at low temperature. To prevent liquid or cold gas from being trapped in piping between valves, equip the piping with pressure relief devices. Use only transfer lines designed for cryogenic liquids. It is recommended to pipe all vents to the exterior of the building. Always stored and used with adequate ventilation. Never work on a pressurized system. If a leak occurs, follow established procedures for isolation and blow down before attempting any repair. Never place a compressed gas cylinder where it may become part of an electrical circuit.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

CAS #	Partial Chemical Name	OSHA TWA	ACGIH TWA	Other Limits
74-82-8	Methane	No data	TLV: Simple asphyxiant ppm	No data
7727-37-9	Nitrogen	No data	TLV: Simple asphyxiant ppm	No data

Respiratory Equipment (Specify Type):

A NIOSH approved, self-contained breathing apparatus (SCBA) or equivalent operated in a pressure demand, or other positive pressure mode, should be used in situations of oxygen deficiency (oxygen content less than 19.5 percent), unknown exposure concentrations, or situations that are immediately dangerous to life or health (IDLH). A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use.

Eye Protection:

The use of eye protection (such as splash goggles) that meets or exceeds ANSI Z.87.1 is recommended when there is potential liquid contact to the eye. Depending on conditions of use, a face shield may be necessary.

Protective Gloves:

Wear thermal insulating gloves and clothing when working with materials that present thermal hazards (hot or cold).

Other Protective Clothing:

Wear thermal insulating gloves and clothing when working with materials that

present thermal hazards (hot or cold). Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Engineering Controls: Provide adequate ventilation to maintain 19.5% oxygen, less than 1% methane (20% of LEL). Use a combustible gas indicator since Methane Refrigerated Liquid is odorless. If ventilation practices are not adequate to maintain airborne concentrations below exposure limits, additional engineering controls may be required. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits.

Work/Hygienic/Maintenance Practices: Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. Suggestions provided in Section 8 for exposure control and specific types of protective equipment are based on readily available information. Specific situations may require consultation regarding industrial hygiene, safety or engineering professionals to ensure proper protection.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	[X] Gas [ ] Liquid [ ] Solid
Appearance and Odor:	Colorless & ODOURLESS TO WEAK HYDROCARBON ODOUR
pH:	NA
Freezing Point:	-182°C
Boiling Point:	-162°C
Flash Pt:	-136°C
Method Used:	Unknown
Evaporation Rate:	NA
Flammability (solid, gas):	If a source of ignition is present where the vapor exists at 5 - 15% concentration in air, the vapor will burn along the flame front towards the source of fuel. Extremely flammable in the presence of the following materials or conditions: open flames, sparks and static discharge.
Explosive Limits:	LEL: 5% (V) UEL: 15% (V)
Vapor Pressure (vs. Air or mm Hg)	600kPa
Vapor Density (vs. Air = 1):	NA
Specific Gravity (Water = 1):	**NA**
Density:	0.54 to 0.66 g/cm³ [0°C]
Solubility in Water:	0.024 to 0.061 g/l
Saturated Vapor Concentration:	NA
Octanol/Water Partition Coefficient:	≤2.8
Percent Volatile:	100 % by volume
Autoignition Pt:	482°C to 632°C
Decomposition Temperature:	No data
Viscosity:	NA
Molecular Formula:	C4H4
Molar mass:	16.042 g/mol

10. STABILITY AND REACTIVITY

Reactivity:	Stable under recommended storage conditions.
Stability:	Unstable [ ] Stable [X]
Conditions To Avoid - Instability:	Heat, flames and sparks. Air. Heat will increase pressure in the storage tank. Stable under recommended storage conditions. Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.
Incompatibility Materials to Avoid:	Air. Oxygen, Strong oxidizing agents. halides, chlorinated

compounds, fluorine.

Hazardous Decomposition or Byproducts: High temperatures and fire conditions can result in the formation of carbon monoxide and carbon dioxide.

Possibility of Hazardous Reactions: Will occur [X] Will not occur [ ]

Conditions To Avoid - Hazardous Reactions: Keep away from source of ignition, heat, high temperatures, flames, sparks, welding and static electricity.

11. TOXICOLOGICAL INFORMATION

Mutagenicity: Not classified as a mutagen.

Reproductive toxicity: Not classified as a reproductive toxin.

Irritation or Corrosion: No Data available

Symptoms related to Toxicological Characteristics: No Data available

Chronic Toxicological Effects: No Data available

Carcinogenicity: NTP - No IARC Monographs - No OSHA Regulated - No

12. ECOLOGICAL INFORMATION

General Ecological Information: Petroleum gases will readily evaporate from the surface and would not be expected to have significant adverse effects in the aquatic environment.

Classification: No classified hazards

Persistence and Degradability: The hydrocarbons in this material are expected to be inherently biodegradable. In practice, hydrocarbon gases are not likely to remain in solution long enough for biodegradation to be a significant loss process.

Bio accumulative Potential: Does not bioaccumulate.

Mobility in Soil: Due to the extreme volatility of petroleum gases, air is the only environmental compartment in which they will be found. Air Released into the atmosphere, constituents are rapidly diluted and undergo photodegradation.

Other adverse effects: Not expected.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method: Do not attempt to dispose of residual or unused quantities. Return container to supplier. Dispose of contents/containers in accordance with local/regional/national/international regulations.

14. TRANSPORT INFORMATION

LAND TRANSPORT (US DOT):

DOT Proper Shipping name: Methane Refrigerated Liquid

DOT Hazard Class: 2.1 FLAMMABLE GAS

UN/NA number: UN1971

Labels:

Sea Transport:

Transport document description (IMDG):

UN-No. (IMDG): UN1971

Proper Shipping Name (IMDG): METHANE, REFRIGERATED LIQUID

Hazard Class: 2.1

Label:

Air Transport:

Transport document description (IATA):

UN-No. (IATA): UN1971

Proper Shipping Name (IATA): Methane, refrigerated liquid

Hazard Class: 2.1

Label:

15. REGULATORY INFORMATION

EPA SARA (Superfund Amendments and Reauthorization Act of 1986) Lists

CAS #	Hazardous Components (Chemical Name)	S. 302 (EHS)	S. 304 RQ	S. 313 (TRI)
74-82-8	Methane	No	No	No
7727-37-9	Nitrogen	No	No	No

CAS #	Hazardous Components (Chemical Name)	Other US EPA or State Lists
74-82-8	Methane	TSCA: Yes - Inventory; CA PROP.65: No; CA TAC, Title 8: No; MA Oil/HazMat: Yes; MI CMR, Part 5: No; NC TAP: No; NJ EHS: Yes - 1202; NY Part 597: No; PA HSL: Yes - 1; SC TAP: No; WI Air: No
7727-37-9	Nitrogen	TSCA: Yes - Inventory; CA PROP.65: No; CA TAC, Title 8: No; MA Oil/HazMat: Yes; MI CMR, Part 5: No; NC TAP: No; NJ EHS: No; NY Part 597: No; PA HSL: Yes - 1; SC TAP: No; WI Air: No

CAS #	Hazardous Components (Chemical Name)	International Regulatory Lists
74-82-8	Methane	Canadian DSL: Yes; Canadian NDSL: No; Mexico INSQ: Yes - 1971; Australia ICS: Yes; New Zealand IOC: Yes; China IECSC: Yes; Japan ENCS: Yes - 9-1726; Korea ECL: Yes - KE-23181; Philippines ICCS: Yes; REACH: Yes - 01-2119474442-39: Full, (P)
7727-37-9	Nitrogen	Canadian DSL: Yes; Canadian NDSL: No; Mexico INSQ: Yes; Australia ICS: Yes; New Zealand IOC: Yes; China IECSC: Yes; Japan ENCS: No; Korea ECL: Yes - KE-25994; Philippines ICCS: Yes; REACH: Yes - (P)

Regulatory Information: California Proposition 65: This material does not contain any chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm at concentrations that trigger the requirements of California Proposition 65. EPA Reportable Quantity (CERCLA) (in pounds): EPA's petroleum exclusions apply to this material. (CERCLA 101(14). CERCLA/SARA Section 313 & 40 CFR 372: This material does not contain any chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372. CERCLA/SARA Section 311/312 (Title III Hazard Categories): Acute Health: Yes, Chronic Health: No Fire Hazard: Yes, Pressure Hazard: Yes, Reaction Hazard: No International Hazard Classification: Canada: This product has been classified in accordance with the hazard criteria of the Controlled Products Regulation (CPR) and the MSDS contains all the information required by the regulation.

16.OTHER INFORMATION

Revision Date:	08/22/2024
Preparer Name:	Crystal Maira
NFPA Ratings:	0= Minimal Hazard 1= Slight Hazard 2= Moderate Hazard 3= Serious Hazard 4= Severe Hazard
Company Policy or Disclaimer:	The information, recommendations, and suggestions herein were compiled from reference material and other sources believed to be reliable. However, the SDS's accuracy or completeness is not guaranteed by Gas Innovations or its affiliates, nor is any responsibility assumed or implied for any loss or damage resulting from inaccuracies or omissions. Since conditions of use are beyond our control, no warranties of merchantability of fitness for a particular purpose are expressed or implied. This SDS is not intended as a license to operate under, or a recommendation to infringe on, any patents. Appropriate warnings and safe handling procedures should be provided to handlers and users.