

Safety Data Sheet: Natural Gas, Sweet or Sour

1. Identification

Product Name: Natural Gas, Sweet or Sour

Synonyms: Marsh Gas, Methane, Processed Gas, Dry Natural Gas, Compressed Natural Gas (CNG), Liquefied Natural Gas (LNG), Fuel Gas

Product Use: Process stream, sales gas

EP Energy
1001 Louisiana Street
Houston, Texas 77002

Information: (713) 997-1000 or 855-269-0826
CHEMTREC: (800) 424-9300

2. Hazard(s) Identification

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

GHS Classification

H220: Flammable gases – Category 1

H280: Gases under pressure – Liquefied gas

H331: Acute toxicity – inhalation – Category 3

H350: Carcinogenicity – Category 1A

Hazards Not Otherwise Classified

May contain or release poisonous hydrogen sulfide gas

GHS Label Elements



Signal Words Danger

GHS Hazard Statements

H220: Extremely flammable gas

H280: Contains gas under pressure. May explode if heated.

OSHA-H01 - MAY DISPLACE OXYGEN AND CAUSE RAPID SUFFOCATION.

CGA-HG04 - MAY FORM EXPLOSIVE MIXTURES WITH AIR

H331: Toxic if inhaled

H350: May cause cancer

May contain or release poisonous hydrogen sulfide gas

Hazards Not Otherwise Classified

GHS Precautionary Statement(s)

P210: Keep away from heat/sparks/open flames/hot surfaces – no smoking.

P377: Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

P381: Eliminate all ignition sources if safe to do so.

P280: Wear protective gloves / protective clothing / eye protection / face protection

Response

P304, P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

P311: Call a POISON CENTER or doctor/physician

Storage

P370: In case of fire: Use dry chemical, carbon dioxide, or foam for extinction P403, P233 Store in a well-ventilated place. Tightly closed.

Disposal

None

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3. Composition/Information on Ingredients

Note: Composition will vary with geographic location, geologic formation, temperature and pressure.

Components	CAS No.	Wt% ⁽¹⁾
Methane	74-82-8	60-95
Propane	74-98-6	20-60
Ethane	74-84-0	1-60
n-Pentane	109-66-0	5-25
Nitrogen	7727-37-9	0-15
n-Hexane	110-54-3	2-13
n-Butane	106-97-8	2-5
Carbon dioxide	124-38-9	0-5
iso-Butane	75-28-5	0-4
iso-Pentane	78-78-4	0-2
iso-Hexane	107-83-5	0-2
Hydrogen sulfide	7783-06-4	Varies

⁽¹⁾Normal composition ranges are shown. Exceptions may occur depending upon the source of the gas. Methane is the principle component.

4. First-Aid Measures

- Inhalation:** If respiratory symptoms develop, move victim to fresh air. Seek immediate medical attention if symptoms persist. If breathing has stopped and airway is clear, provide artificial respiration. Do not use mouth-to-mouth method if victim ingested the substance. Provide artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Administer oxygen if breathing is difficult, if qualified. Seek immediate medical attention.
- Skin Contact:** Remove and isolate contaminated clothing and shoes. Wash affected areas with soap and water. If irritation persists, seek medical attention. Decontaminate clothing before reuse.
- Eye Contact:** Flush eyes with large amounts of water for at least 15 minutes, occasionally lifting the eyelids. Seek medical attention.
- Ingestion:** DO NOT INDUCE VOMITING. If spontaneous vomiting occurs, place on the left side with head down to prevent aspiration of liquid into the lungs. Have exposed individual rinse mouth thoroughly with water. Never give anything by mouth to an unconscious person. Do not leave victim unattended. Monitor for breathing difficulties. Seek immediate medical attention.

Notes to Physician: This material may contain or liberate hydrogen sulfide. In high doses, hydrogen sulfide may produce pulmonary edema and respiratory depression or paralysis.

5. Fire-Fighting Measures

NFPA Ratings: Health: 2 Flammability: 4 Reactivity: 0



General Fire Hazards:

Extremely flammable. Dangerous fire hazard when exposed to heat, sparks or flame. Flammable gas – may cause flash fire. Vapors may reach an ignition source, and flashback. Gases may form explosive mixtures with air. 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.

Extinguishing Media:

Suitable extinguishing media: Class B Fire extinguisher, dry chemical, foam or carbon dioxide. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces.

Unsuitable extinguishing media: Water should not be used as an extinguishing media, but should be used as a spray to keep surrounding areas cool.

Fire Fighting Instructions:

Extinguish fire by stopping the flow of gas, if safe to do so. Allow gas to burn out. Keep the surrounding areas cool by using water mists. Avoid solid water streams. Firefighters should wear self-contained breathing apparatus and full protective clothing. Refer to Section 8 for proper PPE selection.

6. Accidental Release Measures**Personal Precautions:**

Extremely Flammable. Spillage of liquid product will create a fire hazard and may form an explosive atmosphere. Keep all sources of ignition and hot metal surfaces away from spill/release. The use of explosion-proof electrical equipment is recommended. Product may contain or release poisonous hydrogen sulfide gas. Provide sufficient ventilation in the affected area(s) and wear appropriate personal protective equipment as indicated in Section 8 when handling spill material.

Environmental Precautions:

Stop the leak if it can be done without risk. Prevent spilled material from entering waterways, sewers, basements or confined areas. Contain release to prevent further contamination of soils, surface water or groundwater. Clean up spill as soon as possible using appropriate techniques such as applying non-combustible absorbent materials or vacuuming. All equipment used when handling the product must be grounded. A vapor suppressing foam may be used to reduce vapors. Use clean nonsparking tools to collect absorbed material. Where feasible and appropriate, remove contaminated soil.

Methods for Containment and Clean Up:

Product is a gas requiring no cleanup. Report spill/releases, as required and in accordance with all applicable regulations.

Reporting:

Report spills/releases as required, to appropriate local, state and federal authorities. US Coast Guard and Environmental Protection Agency regulations require immediate reporting of spills/release that could reach any waterway. Report spill/release to the National Response Center at (800) 424-8802. In case of accident or road spill, notify Chemtrec at (800) 424-9300.

7. Handling and Storage

Handle in accordance with good industrial hygiene and safety practices. These practices include, but are not limited to, avoiding unnecessary exposure and prompt removal of material from eyes, skin, and clothing. If needed, take first aid actions as indicated in Section 4.

Precautions for Safe Handling:

Handle as flammable. Keep away from heat, sparks and open flame. No smoking. Use only with adequate ventilation. May release or contain dangerous levels of H₂S. Use only with adequate ventilation. Wear appropriate personal protective equipment and use exposure controls as indicated in Section 8. Vent slowly to the atmosphere when opening. Avoid all contact with skin and eyes. Avoid breathing product dust or vapors. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Non-sparking tools should be used. Ground and bond all transfer and storage equipment to prevent static sparks and equip with self-closing valves, pressure vacuum bungs and flame arrestors. Review all operations which have the potential of generating and accumulating electrostatic charge and/or flammable atmosphere. Use appropriate mitigating procedures. Do not enter confined spaces without following proper entry procedures. Remove contaminated clothing immediately. Wash with soap and water after working with this product.

Scales, deposits and sludge from equipment associated with this product may have accumulation of Naturally Occurring Radioactive Materials (NORM). Equipment should be assessed for external gamma radiation.

Conditions for Safe Storage:

Keep away from flame, sparks, excessive temperatures and open flame. No smoking. Maintain vessels closed and clearly labeled. Empty vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose these vessels to sources of ignition. This material may contain or release H₂S. In a tank or other closed container, the vapor space above this material may accumulate hazardous concentrations of H₂S. Do not enter confined spaces without following proper entry procedures. Use appropriate containment to avoid environmental contamination.

Incompatibilities:

Keep away from strong oxidizers, ignition sources and heat.

8. Exposure Controls/Personal Protection

Components	CAS No.	Occupational Exposure Limits			Units
		OSHA ⁽¹⁾	ACGIH ⁽¹⁾	NIOSH ⁽²⁾	
Natural Gas	Mixture	N/A	1000 ⁽³⁾	N/A	N/A
Methane	74-82-8	N/A	1000 ⁽³⁾	N/A	ppm
Ethane	74-84-0	N/A	1000 ⁽³⁾	N/A	ppm
Propane	74-98-6	1000	1000 ⁽³⁾	1000	ppm
n-Butane	106-97-8	N/A	1000 ⁽³⁾	800	ppm
iso-Butane	75-28-5	N/A	1000 ⁽³⁾	800	ppm
n-Pentane	109-66-0	1000	600	120 610 ^{Ceiling}	ppm
iso-Pentane	78-78-4	N/A	600	N/A	ppm
n-Hexane	110-54-3	500	50 ⁽⁴⁾	50	ppm
iso-Hexane	107-83-5	N/A	500 1000 ^{STEL}	100 510 ^{Ceiling}	ppm
Nitrogen	7727-37-9	N/A	Simple Asphyxiant	N/A	ppm
Carbon Dioxide	124-38-9	5,000	5,000 30,000 ^{STEL}	5,000 30,000 ^{STEL}	ppm
Hydrogen Sulfide	7783-06-4	20 ^{Ceiling}	5 ^{STEL}	10 ^{Ceiling}	ppm

⁽¹⁾ 8-hour Time Weighted Average (TWA) unless otherwise specified. Occupational exposure limits based on most recent data, as of 2015.

⁽²⁾ 10-hour TWA unless otherwise specified.

⁽³⁾ Exposure limit given as Aliphatic hydrocarbon gases: Alkanes [C₁-C₄].

⁽⁴⁾ ACGIH has established a Biological Exposure Index (BEI) for this substance.

N/A: Not Applicable

STEL: 15-minute Short Term Exposure Limit

Ceiling: Concentration not to be exceeded at any time

Engineering Controls:

Provide adequate general and local exhaust ventilation to: (1) Maintain airborne chemical concentrations below applicable exposure limits, (2) Prevent accumulation of flammable vapors and formation of explosive atmospheres, and (3) Prevent formation of oxygen deficient atmospheres, especially in confined spaces.

Personal Protective Equipment
Eye Protection:

Safety glasses with side shields are required standard PPE. Face shields are required when working with pressurized lines. Wear chemical goggles when working with liquid natural gas.

Hand Protection:

Avoid skin contact. Use impervious gloves. PVC and neoprene may be suitable for incidental contact. Nitrile rubber should be used for longer term protection when prolonged or frequent contact may occur. Gloves should be worn on clean hands and hands should be washed after removing gloves. Also wash hands with plenty of mild soap and water before eating, drinking, smoking, using toilet facilities or leaving work.

Skin Protection:

Fire Resistant Clothing (FRC) is required standard PPE. Insulated clothing and/or gloves should be worn where liquid or expanding gas may be generated.

Respiratory Protection:

A NIOSH-approved respirator must be worn where controls do not maintain airborne concentrations below occupational exposure limits. Positive-pressure, Full-face, self-contained breathing apparatus (SCBA) should be available for emergency use. H₂S MAY BE PRESENT OR RELEASED. NIOSH-approved respiratory protection should be used when handling crude of high or unknown hydrogen sulfide content and to reduce airborne concentrations to allowable occupational exposure levels.

Work/Hygiene practices:

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and Chemical Properties
Flammable Properties:

Flash Point: -306 °F

Flammable Limits in Air, % by Volume:

Lower (LFL): 4.0 Upper (UFL): 15.0

Auto-ignition Temperature: 900-1170 °F

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Note: Values provided are typical of similar products. There are no test results for this mixture.

Appearance:	Colorless gas	% Volatile by Volume:	100
Odor:	Odorless, tasteless	Viscosity:	Not available
Boiling Point:	-258 °F	Melting Point:	Not available
Freezing Point:	Not available	Vapor Density (Air = 1):	0.6
Vapor Pressure:	Not available	pH:	Not available
Solubility in H₂O:	Slight	Evaporation Rate:	Not available
Specific Gravity @ 60° F & 1 atm:	0.6-0.7	Molecular Wt.:	19.5

10. Stability and Reactivity

Chemical Stability:

Stable under normal anticipated storage and handling temperatures and pressures. Extremely flammable liquid and vapor. Vapor can cause flash fire.

Conditions to Avoid:

Avoid high temperatures and all possible sources of ignition. Prevent vapor accumulation and build-up of static electricity.

Incompatible Materials:

Avoid strong oxidizing agents, such as strong acids, alkalis, chlorine and halogens, dichromates or permanganates, which can cause fire or explosion.

Hazardous Decomposition Products:

Not anticipated under normal conditions of use.

Hazardous Polymerization:

Not known to occur.

11. Toxicological Information

Information on Toxicological Effects of Substance/Mixture

Acute Toxicity	Hazard	Additional Information	LC50/LD50 Data
Inhalation	Unlikely to be harmful	Asphyxiant. High concentrations in confined spaces may limit oxygen available for breathing. See Signs and Symptoms.	> 20,000 ppm (gas)
Ingestion (Swallowing)	Ingestion is not anticipated		Not Applicable
Skin Absorption	Skin absorption is not anticipated		Not Applicable

Aspiration Hazard: Not applicable

Skin Corrosion/Irritation: Skin exposure is not anticipated.

Serious Eye Damage/Irritation: Not expected to be irritating.

Signs and Symptoms: Light hydrocarbon gases are simple asphyxiants 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 (inadequate oxygen), rapid breathing, cyanosis (bluish discoloration of the skin), numbness of the extremities, unconsciousness and death.

Specific Target Organ Toxicity (Single Exposure): Not expected to cause organ effects from single exposure.

Specific Target Organ Toxicity (Repeated Exposure): Not expected to cause organ effects from repeated exposure.

Carcinogenicity: Not expected to cause cancer. This substance is not listed as a carcinogen by IARC, NTP or OSHA.

Generative Cell Mutagenicity: Not expected to cause heritable genetic effects.

Reproductive Toxicity: Not expected to cause reproductive toxicity.

Other Comments: High concentrations may reduce the amount of oxygen available for breathing, especially in confined spaces. Hypoxia (inadequate oxygen) during pregnancy may have adverse effects on the developing fetus.

HYDROGEN SULFIDE: This product may contain or release hydrogen sulfide, which may be fatal if inhaled. Greater than 15-20 ppm continuous

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exposure can cause mucous membrane and respiratory tract irritation. 50-500 ppm can cause headache, nausea, dizziness, loss of reasoning and balance, difficulty breathing, fluid in the lungs and possible loss of consciousness. Greater than 500 ppm can cause rapid or immediate unconsciousness due to respiratory paralysis and death by suffocation unless removed from exposure and successfully resuscitated. Inhalation of a single breath at a concentration of 1000 ppm (0.1%) can cause immediate unconsciousness and death. Hydrogen sulfide is corrosive when moist. Skin contact may cause burns. There is a rapid loss of sense of smell on exposure to gas concentrations above 50 ppm. At high concentrations, individuals may not even recognize the odor before becoming unconscious.

Carcinogenicity:

Component (CAS No.)	ACGIH⁽¹⁾	IARC Monographs⁽²⁾	US NTP	OSHA Regulated
None listed	None listed	None listed	None listed	None listed

⁽¹⁾ACGIH Carcinogens: A1 = Confirmed human carcinogen, A2 = Suspected human carcinogen, A3 = Confirmed animal carcinogen with unknown relevance to humans, A4 = Not classifiable as a human carcinogen, A5 = Not suspected as a human carcinogen

⁽²⁾IARC Monographs: 1 = Carcinogenic to humans, 2A = Probably carcinogenic to humans, 2B = Possibly carcinogenic to humans, 3 = Not classifiable as to carcinogenicity to humans, 4 = Probably not carcinogenic to humans

12. Ecological Information

H₂S is toxic to aquatic organisms. Ecotoxicity data not available for this product.

Keep out of sewers, drainage areas, and waterways. Report spills and releases, as applicable, under Federal and State regulations.

13. Disposal Information

This product, in its present state, when discarded or disposed of, is not a hazardous waste according to Federal regulations. Do not dispose of waste into sewer. However, if the product is disposed of in containers, it may meet the criteria of being an "ignitable" waste. If hydrogen sulfide is present in the waste, the waste is considered a hazardous U-listed waste. Under RCRA, it is the responsibility of the user to determine, at the time of disposal, if the material meets federal, state, or local criteria to be defined as a hazardous waste.

14. Transport Information

UN/Identification Number: UN 1971
Proper Shipping Name: Methane, compressed
Hazard Class: 2.1 (Flammable Gas)
Packing Group: Not assigned
ERG#: 115

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:
No	No	Yes	Yes	No

Section 313 EPCRA Toxic Substances

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

EPA TSCA

All components are either on the U.S. EPA TSCA Inventory List, or are not regulated under TSCA.

Key: RQ = Reportable Quantity
 TPQ = Threshold Planning Quantity

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Date Prepared: 09/02/1997, **Last Revision:** 06/01/2015

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Key/Legend:

ACGIH - American Conference of Governmental Industrial Hygienists
 ADR - Agreement on Dangerous Goods by Road
 CAA - Clean Air Act
 CAS - Chemical Abstracts Service Registry Number
 CDG - Carriage of Dangerous Goods By Road and Rail Manual
 CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
 CFR - Code of Federal Regulations
 CNS - Central Nervous System
 EINECS - European Inventory of Existing Chemical Substances Registry Number
 ERG - Emergency Response Guidebook
 EPCRA - Emergency Planning and Community Right-to-Know Act
 GHS - Globally Harmonized System of Classification and Labeling of Chemicals
 IARC - International Agency for Research on Cancer
 IATA - International Air Transport Association
 ICAO - International Civil Aviation Organization
 IMDG - International Maritime Dangerous Goods Code
 IMO - International Maritime Organization
 MSDS - Material Safety Data Sheet
 N/E - Not Established
 NTP - National Toxicology Program
 OSHA - Occupational Safety and Health Administration
 PEL - Permissible Exposure Limit
 PPE - Personal Protective Equipment
 RCRA - Resource Conservation and Recovery Act
 RID - Regulations Concerning the International Transport of Dangerous Goods by Rail
 RQ - Reportable Quantities
 SARA - Superfund Amendments and Reauthorization Act of 1986
 SDS - Safety Data Sheet
 TCC - Tag Closed Cup
 TDG - Transportation of Dangerous Goods
 TLV - Threshold Limit Value
 TSCA - Toxic Substance Control Act
 UN/NA - United Nations / North American Number
 UNECE - United Nations Economic Commission for Europe
 US DOT - United States Department of Transportation
 US EPA - United States Environmental Protection Agency
 Vol. - Volume
 WHMIS - Workplace Hazardous Materials Information System

This is the end of MSDS A0004.sds