

## Safety Data Sheet

### Section 1: Identification

#### Product identifier

**Product Name**

- **Natural Gas Sour**

**Synonyms**

- Casing Gas; Field Gas; Fuel Gas; Petroleum Gas; Rotten Egg Gas; Separator Gas

**Relevant identified uses of the substance or mixture and uses advised against**

**Recommended use**

- Industrial Use

**Details of the supplier of the safety data sheet**

**Manufacturer**

- 

**Telephone (General)** • 281-840-4000 - EHS Telephone No.

**Emergency telephone number**

**Manufacturer**

- 1-866-951-9825 - Company Emergency Telephone No. (3E)

### Section 2: Hazard Identification

#### United States (US)

According to OSHA 29 CFR 1910.1200 HCS

#### Classification of the substance or mixture

**OSHA HCS 2012**

- Flammable Gases 1 - H220  
Liquefied Gas - H280  
Acute Toxicity Inhalation 4 - H332  
Simple Asphyxiant  
Hazards Not Otherwise Classified - Health Hazards - Frostbite

#### Label elements

**OSHA HCS 2012**

**DANGER**



**Hazard statements**

- Extremely flammable gas - H220  
Contains gas under pressure; may explode if heated - H280  
Harmful if inhaled - H332

May displace oxygen and cause rapid suffocation.

## Precautionary statements

- Prevention** • Keep away from heat, sparks, open flames and/or hot surfaces. - P210  
Avoid breathing vapor/gas. - P261  
Use only outdoors or in a well-ventilated area. - P271

- Response** • Leaking gas fire: Do not extinguish, unless leak can be stopped safely. - P377  
Eliminate all ignition sources if safe to do so. - P381  
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. - P304+P340  
Call a POISON CENTER or doctor/physician if you feel unwell. - P312

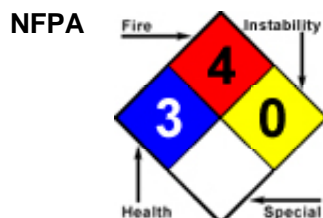
- Storage/Disposal** • Store in a well-ventilated place. - P403

## Other hazards

### OSHA HCS 2012

- Contact with gas or liquefied gas will cause burns, severe injury and/or frostbite. Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

## Other information



## Section 3 - Composition/Information on Ingredients

### Substances

- Material does not meet the criteria of a substance.

### Mixtures

| Composition      |                            |               |  |  |          |
|------------------|----------------------------|---------------|--|--|----------|
| Chemical Name    | Identifiers                | %             | LD50/LC50  | Classifications According to Regulation/Directive                  | Comments |
| Methane          | CAS:74-82-8<br>UN:UN1971   | 66% TO<br>68% | NDA  | OSHA HCS 2012: Flam. Gas 1; Press. Gas - Liq.; Simp. Asphyx.       | NDA      |
| Ethane           | CAS:74-84-0<br>UN:UN1035   | 14% TO<br>16% | NDA  | OSHA HCS 2012: Flam. Gas 1; Press. Gas - Liq.; Simp. Asphyx.       | NDA      |
| Propane          | CAS:74-98-6<br>UN:UN1978   | 7% TO<br>9%   | NDA  | OSHA HCS 2012: Flam. Gas 1; Press. Gas - Liq.; Simp. Asphyx.       | NDA      |
| Butane           | CAS:106-97-8<br>UN:UN1011  | 1% TO<br>3%   | Inhalation-Rat LC50 • 658 g/m <sup>3</sup> 4 Hour(s) | OSHA HCS 2012: Flam. Gas 1; Press. Gas - Liq.; Simp. Asphyx.       | NDA      |
| Hydrogen sulfide | CAS:7783-06-4<br>UN:UN1053 | > 0.05%       | Inhalation-Rat LC50 • 444 ppm                        | OSHA HCS 2012: Flam. Gas 1; Press. Gas - Liq.; Acute Tox. 2 (inhl) | NDA      |

## Section 4: First-Aid Measures

### Description of first aid measures

#### Inhalation

- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Administer oxygen if breathing is difficult. Give artificial respiration if victim is not breathing. If signs/symptoms continue, get medical attention.

#### Skin

- If frostbite has occurred, seek medical attention immediately; do NOT rub the affected area(s) or flush them with water. In order to prevent further tissue damage, do NOT attempt to remove frozen clothing from frostbitten areas. If frostbite has not occurred, immediately and thoroughly wash contaminated skin with soap and water.

#### Eye

- If eye tissue is frozen, seek medical attention immediately; if tissue is not frozen, immediately and thoroughly flush the eyes with large amounts of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. If irritation, pain, swelling, lacrimation or photophobia persist, get medical attention as soon as possible.

#### Ingestion

- If frostbite has occurred, seek medical attention immediately; do NOT rub the affected area(s) or flush them with water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting.

### Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

### Indication of any immediate medical attention and special treatment needed

#### Notes to Physician

- All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

### Other information

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. RESCUERS SHOULD NOT ATTEMPT TO RETRIEVE VICTIMS OF EXPOSURE TO GASES WITHOUT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. At a minimum, Self-Contained Breathing Apparatus must be worn. Victim(s) who experience any adverse effect after over-exposure to this gas mixture must be taken for medical attention. Rescuers should be taken for medical attention if necessary. Take a copy of the label and the MSDS to physician or other health professional with victim(s).

## Section 5: Fire-Fighting Measures

### Extinguishing media

#### Suitable Extinguishing Media

- SMALL FIRES: Dry chemical or CO<sub>2</sub>.  
LARGE FIRES: Water spray or fog.

#### Unsuitable Extinguishing Media

- No data available

### Special hazards arising from the substance or mixture

#### Unusual Fire and Explosion Hazards

- EXTREMELY FLAMMABLE  
Will form explosive mixtures with air.  
Will be easily ignited by heat, sparks or flames.  
Vapors from liquefied gas are initially heavier than air and spread along ground.  
Vapors may travel to source of ignition and flash back.  
Cylinders exposed to fire may vent and release flammable gas through pressure relief devices.  
Containers may explode when heated.  
Ruptured cylinders may rocket.

#### Hazardous Combustion Products

- Carbon Oxides, Sulfur Oxides, Hydrogen Sulfide.

### Advice for firefighters

- Structural firefighters' protective clothing provides limited protection in fire situations

ONLY; it is not effective in spill situations where direct contact with the substance is possible.  
 Wear positive pressure self-contained breathing apparatus (SCBA).  
**DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED**  
 Move containers from fire area if you can do it without risk.  
**FIRE INVOLVING TANKS: ALWAYS** stay away from tanks engulfed in fire.  
**FIRE INVOLVING TANKS:** Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.  
**FIRE:** If tank, rail car or tank truck is involved in a fire, **ISOLATE** for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.  
**FIRE INVOLVING TANKS:** Cool containers with flooding quantities of water until well after fire is out.  
**FIRE INVOLVING TANKS:** For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.  
**FIRE INVOLVING TANKS:** Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.  
**FIRE INVOLVING TANKS:** Do not direct water at source of leak or safety devices; icing may occur.

## Section 6 - Accidental Release Measures

### Personal precautions, protective equipment and emergency procedures

#### Personal Precautions

- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Do not touch or walk through spilled material. Ventilate the area before entry. Wear appropriate personal protective equipment, avoid direct contact.

#### Emergency Procedures

- ELIMINATE** all ignition sources (no smoking, flares, sparks or flames in immediate area) As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions. Stop leak if you can do it without risk. Keep unauthorized personnel away. Keep out of low areas. Stay upwind. Ventilate enclosed areas. **LARGE SPILL:** Consider initial downwind evacuation for at least 800 meters (1/2 mile)

### Environmental precautions

- Prevent entry into waterways, sewers, basements or confined areas.

### Methods and material for containment and cleaning up

#### Containment/Clean-up Measures

- All equipment used when handling the product must be grounded. Stop leak if you can do it without risk. If possible, turn leaking containers so that gas escapes rather than liquid. Use water spray to reduce vapors; do not put water directly on leak, spill area or inside container. Do not direct water at spill or source of leak. Isolate area until gas has dispersed.

## Section 7 - Handling and Storage

### Precautions for safe handling

#### Handling

- Open valve slowly. Control oxygen content in the workplace as described in section 8 of the MSDS. Secure that cylinders are not exposed to heat. Keep away from ignition sources such as heat/sparks/open flame - No smoking. Use non-sparking hand tools and explosion-proof electrical equipment. Avoid contact with eyes, skin, and clothing. Ground container and transfer equipment to eliminate static electric sparks. This product may contain **NORM** (Naturally Occurring Radioactive Material). Special precautions should be followed when entering or handling equipment containing **NORM**. Prior to entry or handling for cleaning or maintenance, the equipment should be checked for radioactivity and appropriate precautions taken to reduce potential exposure including measures to prevent inhalation, absorption, or ingestion.

### Conditions for safe storage, including any incompatibilities

#### Storage

- Flammable compressed gas storage. Keep container tightly closed in a cool, well-

ventilated place. Secure cylinders in an upright position at all times, close all valves when not in use. Secure cylinders from falling or being knocked over. Should be stored and transported separately from oxygen and other oxidizers. Ground container and transfer equipment to eliminate static electric sparks. Store away from incompatible materials.

## Section 8 - Exposure Controls/Personal Protection

### Control parameters

| Exposure Limits/Guidelines      |          |  |  |  |
|---------------------------------|----------|--|--|--|
|                                 | Result   | ACGIH  | NIOSH  | OSHA                                     |
| Hydrogen sulfide<br>(7783-06-4) | Ceilings | Not established  | 10 ppm Ceiling (10 min); 15 mg/m <sup>3</sup> Ceiling (10 min) | 20 ppm Ceiling                           |
|                                 | STELs    | 5 ppm STEL   | Not established  | Not established                          |
|                                 | TWAs     | 1 ppm TWA  | Not established  | Not established                          |
| Butane<br>(106-97-8)            | TWAs     | 1000 ppm TWA (listed under Aliphatic hydrocarbon gases: Alkane C1-4) | 800 ppm TWA; 1900 mg/m <sup>3</sup> TWA                        | Not established                          |
| Propane<br>(74-98-6)            | TWAs     | 1000 ppm TWA (listed under Aliphatic hydrocarbon gases: Alkane C1-4) | 1000 ppm TWA; 1800 mg/m <sup>3</sup> TWA                       | 1000 ppm TWA; 1800 mg/m <sup>3</sup> TWA |
| Ethane<br>(74-84-0)             | TWAs     | 1000 ppm TWA (listed under Aliphatic hydrocarbon gases: Alkane C1-4) | Not established  | Not established                          |
| Methane<br>(74-82-8)            | TWAs     | 1000 ppm TWA (listed under Aliphatic hydrocarbon gases: Alkane C1-4) | Not established  | Not established                          |

### Exposure controls

#### Engineering Measures/Controls

- Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Use explosion-proof electrical, ventilating and/or lighting equipment.

#### Personal Protective Equipment

##### Respiratory

- Follow the OSHA respirator regulations found in 29 CFR 1910.134. Use a NIOSH/MSHA approved respirator if exposure limits are exceeded or symptoms are experienced.

##### Eye/Face

- Wear safety goggles.

##### Skin/Body

- Thermally protective gloves, apron, and long sleeves are recommended.

#### Environmental Exposure Controls

- Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways. Follow best practice for site management and disposal of waste.

#### Key to abbreviations

ACGIH = American Conference of Governmental Industrial Hygiene

NIOSH = National Institute of Occupational Safety and Health

OSHA = Occupational Safety and Health Administration

STEL = Short Term Exposure Limits are based on 15-minute exposures

TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures

## Section 9 - Physical and Chemical Properties

### Information on Physical and Chemical Properties

| <b>Material Description</b>         |                                   |                        |  |
|-------------------------------------|-----------------------------------|------------------------|--|
| Physical Form                       | Gas                               | Appearance/Description | Clear gas with odorless to rotten egg odor.          |
| Color                               | Clear                             | Odor                   | Odorless to rotten egg odor.                         |
| Odor Threshold                      | 0.02 ppm<br>Hydrogen Sulfide      |                        |  |
| <b>General Properties</b>           |                                   |                        |  |
| Boiling Point                       | -161 C(-257.8 F)<br>Approximate   | Melting Point          | < -182 C(< -295.6 F)<br>(Freezing Point) Approximate |
| Decomposition Temperature           | Data lacking                      | pH                     | Not relevant   |
| Specific Gravity/Relative Density   | < 0.3 Water=1 @ 4 C(39.2 F)       | Water Solubility       | Negligible   |
| Viscosity                           | Data lacking                      |                        |  |
| <b>Volatility</b>                   |                                   |                        |  |
| Vapor Pressure                      | Data lacking                      | Vapor Density          | 0.5 Air=1<br>Approximate                             |
| Evaporation Rate                    | Not relevant                      |                        |  |
| <b>Flammability</b>                 |                                   |                        |  |
| Flash Point                         | < -187 C(< -304.6 F)<br>Estimated | UEL                    | 17 %<br>Approximate                                  |
| LEL                                 | 3.2 %<br>Approximate              | Autoignition           | 498 C(928.4 F)<br>Estimated                          |
| Flammability (solid, gas)           | Flammable Gas.                    |                        |  |
| <b>Environmental</b>                |                                   |                        |  |
| Octanol/Water Partition coefficient | Data lacking                      |                        |  |

## Section 10: Stability and Reactivity

### Reactivity

- No dangerous reaction known under conditions of normal use.

### Chemical stability

- Stable under normal temperatures and pressures.

### Possibility of hazardous reactions

- No data available

### Conditions to avoid

- Keep away from heat, sparks and flame.

### Incompatible materials

- Strong oxidizing agents.

### Hazardous decomposition products

- No data available

## Section 11 - Toxicological Information

### Information on toxicological effects

| Component Name             | CAS       | Data   |
|----------------------------|-----------|--|
| Butane (1% TO 3%)          | 106-97-8  | <b>Acute Toxicity:</b> ihl-rat LC50:658 gm/m3/4H   |
| Hydrogen sulfide (> 0.05%) | 7783-06-4 | <b>Irritation:</b> eye-hmn 0.000125 ppm/5H;<br><b>Reproductive:</b> ihl-rat TCLo:10 mg/m3 (48D pre/1-22D preg) |

| GHS Properties                | Classification  |
|-------------------------------|---|
| Acute toxicity                | OSHA HCS 2012 • Acute Toxicity 4 (Inhalation) - ATEmix (inhl) = 4185ppm |
| Aspiration Hazard             | OSHA HCS 2012 • Classification criteria not met                         |
| Carcinogenicity               | OSHA HCS 2012 • Classification criteria not met                         |
| Germ Cell Mutagenicity        | OSHA HCS 2012 • Classification criteria not met                         |
| Skin corrosion/Irritation     | OSHA HCS 2012 • Classification criteria not met                         |
| Skin sensitization            | OSHA HCS 2012 • Classification criteria not met                         |
| STOT-RE                       | OSHA HCS 2012 • Classification criteria not met                         |
| STOT-SE                       | OSHA HCS 2012 • Classification criteria not met                         |
| Toxicity for Reproduction     | OSHA HCS 2012 • Classification criteria not met                         |
| Respiratory sensitization     | OSHA HCS 2012 • Classification criteria not met                         |
| Serious eye damage/Irritation | OSHA HCS 2012 • Classification criteria not met                         |

Route(s) of entry/exposure • Inhalation, Skin, Eye

**Potential Health Effects**

**Inhalation**

**Acute (Immediate)**

- If this material is released in a small, poorly ventilated area (i.e. an enclosed or confined space), an oxygen-deficient environment may occur. Individuals breathing such an atmosphere may experience symptoms which include headaches, ringing in ears, dizziness, drowsiness, unconsciousness, nausea, vomiting, and depression of all the senses. Under some circumstances of over-exposure, death may occur. The following effects associated with decreased levels of oxygen: increase in breathing and pulse rate, emotional upset, abnormal fatigue, nausea, vomiting, collapse, loss of consciousness, convulsive movements, respiratory collapse and death. Vapor may irritate the respiratory tract. Hydrogen sulfide gas (less than 50 ppm) can cause nose, throat and lung irritation and at higher concentrations (above 500 ppm) may be lethal due to impaired breathing.

**Chronic (Delayed)**

- No data available

**Skin**

**Acute (Immediate)**

- Contact with gas or liquefied gas will cause burns, severe injury and/or frostbite.

**Chronic (Delayed)**

- No data available

**Eye**

**Acute (Immediate)**

- Contact with gas or liquefied gas will cause burns, severe injury and/or frostbite. Vapor may irritate eyes.

**Chronic (Delayed)**

- No data available

**Ingestion**

**Acute (Immediate)**

- Ingestion is not anticipated to be a likely route of exposure to this product.

**Chronic (Delayed)**

- No data available

**Key to abbreviations**

LC = Lethal Concentration  
 TC = Toxic Concentration

**Section 12 - Ecological Information**

**Toxicity**

- Material data lacking.

**Persistence and degradability**

- Not relevant.

**Bioaccumulative potential**

- Not relevant.

**Mobility in Soil**

- Not relevant.

**Other adverse effects**

- No studies have been found.

**Section 13 - Disposal Considerations**

**Waste treatment methods**

**Product waste**

- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

**Packaging waste**

- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

**Section 14 - Transport Information**

|     | 14.1 UN number | 14.2 UN proper shipping name | 14.3 Transport hazard class(es) | 14.4 Packing group | 14.5 Environmental hazards |
|-----|----------------|------------------------------|---------------------------------|--------------------|----------------------------|
| DOT | UN1971         | Methane, compressed          | 2.1                             | NDA                | NDA                        |

**Special precautions for user**

- Cylinders should be transported in a secure position, in a well-ventilated vehicle. The transportation of compressed gas cylinders in automobiles or in closed-body vehicles can present serious safety hazards. If transporting these cylinders in vehicles, ensure these cylinders are not exposed to extremely high temperatures (as may occur in an enclosed vehicle on a hot day). Additionally, the vehicle should be well-ventilated during transportation.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

- Not relevant.

**Other information**

- DOT • Hydrogen sulfide has a reportable quantity of 100 lbs (45.4 kg) as listed in Appendix A to 49 CFR 172.101.

**Section 15 - Regulatory Information**

**Safety, health and environmental regulations/legislation specific for the substance or mixture**

**SARA Hazard Classifications**

- Acute, Fire, Pressure(Sudden Release of)

**Section 16 - Other Information**

**Last Revision Date**

- 09/August/2013

**Preparation Date**

- 09/August/2013

**Disclaimer/Statement of Liability**

- This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.



**Key to abbreviations**

NDA = No Data Available

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