

## Safety Data Sheet

### Section 1: Identification

#### Product identifier

##### Product Name

- **Natural Gas**

##### Synonyms

- Casing Gas; Field Gas; Fuel Gas; Petroleum 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

- Riviera Operating, LLC  
600 Travis  
Suite 1700 Houston, TX 77002  
United States  
www.rivieraresourcesinc.com

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  
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  
May displace oxygen and cause rapid suffocation.

#### Precautionary statements

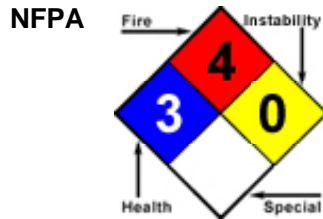
- Prevention** • Keep away from heat, sparks, open flames and/or hot surfaces. - P210  
Wear protective gloves/protective clothing/eye protection/face protection. - P280
- Response** • Leaking gas fire: Do not extinguish, unless leak can be stopped safely. - P377  
Eliminate all ignition sources if safe to do so. - P381
- 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	66% TO 68%	NDA	OSHA HCS 2012: Flam. Gas 1; Press. Gas - Liq.; Simp. Asphyx.	NDA
Ethane	CAS:74-84-0	14% TO 16%	NDA	OSHA HCS 2012: Flam. Gas 1; Press. Gas - Liq.; Simp. Asphyx.	NDA
Propane	CAS:74-98-6	7% TO 9%	NDA	OSHA HCS 2012: Flam. Gas 1; Press. Gas - Liq.; Simp. Asphyx.	NDA
Butane	CAS:106-97-8	1% TO 3%	Inhalation-Rat LC50 • 658 g/m³ 4 Hour(s)	OSHA HCS 2012: Flam. Gas 1; Press. Gas - Liq.; Simp. Asphyx.	NDA
Hydrogen sulfide	CAS:7783-06-4	< 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.

### 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 spreading of vapors through sewers, ventilation systems and 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 heat and ignition sources – No Smoking. Use only non-sparking tools. Use explosion-proof - electrical, ventilating and/or lighting equipment. Avoid contact with skin, eyes or clothing. All equipment used when handling the product must be grounded. Take precautionary measures against static charges. Wear appropriate personal protective equipment, avoid direct contact. Use only with adequate ventilation. Prior to entry or handling for cleaning or maintenance, the equipment should be checked for radioactivity or opened to the atmosphere and ventilated for at least four hours. During this four hour period any gamma radiation should decrease to background levels. To avoid exposure to alpha and beta radiation emitted by radon daughter products, avoid direct skin contact with internal surface area of the equipment.

### Conditions for safe storage, including any incompatibilities

#### Storage

- Flammable compressed gas storage. Keep container/package tightly closed in a cool, well-ventilated place. Secure cylinders in an upright position at all times, close all valves when not in use. Cylinders should be firmly secured to prevent 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. Keep away from incompatible materials.

## Section 8 - Exposure Controls/Personal Protection

## Control parameters

Exposure Limits/Guidelines				
	Result	ACGIH	NIOSH	OSHA
Hydrogen sulfide (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 (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 (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 (74-84-0)	TWAs	1000 ppm TWA (listed under Aliphatic hydrocarbon gases: Alkane C1-4)	Not established	Not established
Methane (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

Material Description			
Physical Form	Gas	Appearance/Description	Clear gas with odorless to rotten egg odor.
Color	Clear	Odor	Odorless to rotten egg odor.
Odor Threshold	Data lacking		
General Properties			

Boiling Point	-161 C(-257.8 F) Approximate	Melting Point	< -182 C(< -295.6 F) (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 Approximate
Evaporation Rate	Not relevant		
<b>Flammability</b>			
Flash Point	< -187 C(< -304.6 F) Estimated	UEL	17 % Approximate
LEL	3.2 % Approximate	Autoignition	498 C(928.4 F) Estimated
Flammability (solid, gas)	Flammable Liquid.		
<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

- Hazardous polymerization will not occur.

### 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; <b>Reproductive:</b> ihl-rat TCLo:10 mg/m3 (48D pre/1-22D preg)
<b>GHS Properties</b>		<b>Classification</b>
<b>Acute toxicity</b>		OSHA HCS 2012 • Classification criteria not met
<b>Aspiration Hazard</b>		OSHA HCS 2012 • Classification criteria not met
<b>Carcinogenicity</b>		OSHA HCS 2012 • Classification criteria not met
<b>Germ Cell Mutagenicity</b>		OSHA HCS 2012 • Classification criteria not met

<b>Skin corrosion/Irritation</b>	OSHA HCS 2012 • Classification criteria not met
<b>Skin sensitization</b>	OSHA HCS 2012 • Classification criteria not met
<b>STOT-RE</b>	OSHA HCS 2012 • Classification criteria not met
<b>STOT-SE</b>	OSHA HCS 2012 • Classification criteria not met
<b>Toxicity for Reproduction</b>	OSHA HCS 2012 • Classification criteria not met
<b>Respiratory sensitization</b>	OSHA HCS 2012 • Classification criteria not met
<b>Serious eye damage/Irritation</b>	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. 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.

#### 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