

Safety Data Sheet**Section 1: Identification****Product identifier**

- Product Name** • **Propane**
- CAS Number** • 74-98-6
- EC Number** • 200-827-9
- Molecular Formula** • :C 3:H 8:

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
717 Texas Ave
Suite 2000 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
- 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** • Protect from sunlight. Store in a well-ventilated place. - P410+P403

Other hazards

- OSHA HCS 2012** • Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

Section 3 - Composition/Information on Ingredients

Substances

| Composition | | | | | |
|---------------|--------------------------|------|-----------|--|----------|
| Chemical Name | Identifiers | % | LD50/LC50 | Classifications According to Regulation/Directive | Comments |
| Propane | CAS:74-98-6 UN:UN1978 | 100% | NDA | OSHA HCS 2012: Flam. Gas 1; Press. Gas - Liq.; Simp. Asphyx.; HNOC - Frostbite | NDA |

Mixtures

- Material does not meet the criteria of a mixture.

See Section 16 for full text of H-statements and R-phrases.

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 overexposure 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 CO₂.
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.
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 dioxide and possibly carbon monoxide.

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.
Always wear thermal protective clothing when handling refrigerated/cryogenic liquids. 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: 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: 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 INVOLVING TANKS: Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
FIRE INVOLVING TANKS: Cool containers with flooding quantities of water until well after fire is out.
FIRE INVOLVING TANKS: Do not direct water at source of leak or safety devices; icing may occur.
FIRE INVOLVING TANKS: For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

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.

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. 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

- Keep away from heat and ignition sources – No Smoking. Take precautionary measures against static charges. All equipment used when handling the product must be grounded. Use only non-sparking tools. Use only with adequate ventilation. Ventilate closed spaces before entering. Be aware of any signs of dizziness or fatigue, especially if work is done in a poorly ventilated area; exposures to fatal concentrations of this gas mixture could occur without any significant warning symptoms, due to olfactory fatigue or oxygen deficiency. Cylinders should be firmly secured to prevent falling or being knocked-over. Use explosion-proof - electrical, ventilating and/or lighting equipment. Do not attempt to repair, adjust, or in any other way modify cylinders. If there is a malfunction or another type of operational problem, contact nearest distributor immediately. Empty containers retain product residue and can be hazardous. Do not cut, weld, puncture or incinerate container.

Conditions for safe storage, including any incompatibilities

Storage

- Cylinders should be stored in dry, well-ventilated areas away from sources of heat, ignition and direct sunlight. Do not allow area where cylinders are stored to exceed 52C (125F). Cylinders must be protected from the environment, and preferably kept at room temperature approximately 21C (70F). Protect cylinders against physical damage. Cylinders should be firmly secured to prevent falling or being knocked-over. Store locked up.

Section 8 - Exposure Controls/Personal Protection

Control parameters

Exposure Limits/Guidelines

| | Result | ACGIH | NIOSH | OSHA |
|-------------------|--------|--|------------------------------|------------------------------|
| Propane (74-98-6) | TWAs | 1000 ppm TWA (listed under Aliphatic hydrocarbon gases: Alkane C1-4) | 1000 ppm TWA; 1800 mg/m3 TWA | 1000 ppm TWA; 1800 mg/m3 TWA |

Exposure Limits Supplemental

ACGIH

•Propane (74-98-6): **TLV Basis - Critical Effects:** (cardiac sensitization (listed under Aliphatic hydrocarbon gases: Alkanes C1-4); CNS impairment (listed under Aliphatic hydrocarbon gases: Alkanes C1-4))

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**

- In case of insufficient ventilation, wear suitable respiratory equipment.

Eye/Face

- Wear safety glasses.

Skin/Body

- Wear leather gloves when handling cylinders.

Environmental Exposure Controls

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

Key to abbreviations

ACGIH = American Conference of Governmental Industrial Hygiene

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

NIOSH = National Institute of Occupational Safety and Health

TLV = Threshold Limit Value determined by the American Conference of Governmental Industrial Hygienists (ACGIH)

OSHA = Occupational Safety and Health Administration

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

PEL = Permissible Exposure Level determined by the Occupational Safety and Health Administration (OSHA)

TWAEV = Time-Weighted Average Exposure Value

Section 9 - Physical and Chemical Properties**Information on Physical and Chemical Properties**

| Material Description | | | |
|-------------------------------------|--------------------------------------|------------------------|-----------------------------|
| Physical Form | Gas | Appearance/Description | Colorless gas with no odor. |
| Color | Colorless | Odor | Odorless |
| Odor Threshold | Data lacking | | |
| General Properties | | | |
| Boiling Point | -42 C (-43.6 F) | Melting Point | -186 C (-302.8 F) |
| Decomposition Temperature | Data lacking | pH | Data lacking |
| Specific Gravity/Relative Density | 0.59 Water=1 | Water Solubility | Insoluble In cold water |
| Viscosity | Data lacking | | |
| Volatility | | | |
| Vapor Pressure | 77 kPa @ 20 C (68 F) | Vapor Density | 1.6 Air=1 |
| Evaporation Rate | Data lacking | | |
| Flammability | | | |
| Flash Point | -104.4 C (-155.92 F) CC (Closed Cup) | UEL | 9.5 % |
| LEL | 2.1 % | Autoignition | 449.9 C (841.82 F) |
| Flammability (solid, gas) | Flammable Gas. | | |
| Environmental | | | |
| 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

- Excess heat, sparks, open flame.

Incompatible materials

- Keep away from oxidizing agents.

Hazardous decomposition products

- Carbon oxide.

Section 11 - Toxicological Information**Information on toxicological effects**

| GHS Properties | Classification |
|-------------------------------|---|
| Acute toxicity | OSHA HCS 2012 • Classification criteria not met |
| 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 |

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.

Chronic (Delayed)

- Under normal conditions of use, no health effects are expected.

Skin**Acute (Immediate)**

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

Chronic (Delayed)

- Under normal conditions of use, no health effects are expected.

Eye**Acute (Immediate)**

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

Chronic (Delayed)

- Under normal conditions of use, no health effects are expected.

Ingestion

- Acute (Immediate)**
 - Under normal conditions of use, no health effects are expected.
- Chronic (Delayed)**
 - Under normal conditions of use, no health effects are expected.

Section 12 - Ecological Information**Toxicity**

- This gas does not present a hazard of toxicity to the environment.

Persistence and degradability

- This gas does not present a hazard of persistence and does not biodegrade as it is an elemental gas.

Bioaccumulative potential

- This gas does not present a hazard of bio-accumulation.

Mobility in Soil

- This gas does not present a hazard of mobility in the soil.

Other adverse effects

- Material data lacking.

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 | UN1978 | Propane | 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.

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** • 13/August/2013
- Preparation Date** • 13/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.
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