Safety Data Sheet

Chemical Name: Propane

Synonyms: Dimethylmethane, Liquefied Petroleum Gas (LPG), Sales Propane, Commercial Propane, Refinery Propane, Product Propane (non-odorized)

Section 1 - Chemical Product and Company Identification

Company Information
Ferrellgas (Blue Rhino)
One Liberty Plaza
Liberty, MO 64068
Emergency # 800-424-9300 (CHEMTREC)
General SDS assistance # 855-738-9178 (Ferrellgas Safety Department)

Product Information
Product: Propane (odorized)
Chemical Name: Propane
Chemical Family: Liquefied Petroleum Gas (Paraffinic Hydrocarbons)
Chemical Formula: C₃H₈

Section 2 - Hazards Identification

GHS Classification:
Flammable Gas - Category 1
Gases Under Pressure - Liquefied Gas

GHS LABEL ELEMENTS
Pictogram(s)

Signal Word
Danger

Hazard Statements
H220 - Extremely flammable gas.
H280 - Contains gas under pressure, may explode if heated.

Precautionary Statements
Prevention
P210 - Keep away from heat/sparks/open flames/hot surfaces. No smoking
Response
P376 - Stop leak if safe to do so.
P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 - Eliminate all ignition sources if safe to do so.
Storage
P403 - Store in a well-ventilated place.
P405 - Store locked up.
P410 - Protect from sunlight.
Disposal
P501 - Dispose of contents/container in accordance with local/regional/national/international regulations.
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Material Name: Propane

Section 3 - Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Component</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>74-98-6</td>
<td>Propane</td>
<td>85 - 100</td>
</tr>
<tr>
<td>106-97-8</td>
<td>Butane and heavier</td>
<td>0 - 2.5</td>
</tr>
<tr>
<td>74-84-0</td>
<td>Ethane</td>
<td>0 - 5</td>
</tr>
<tr>
<td>115-07-1</td>
<td>Propylene</td>
<td>0 - 10</td>
</tr>
<tr>
<td>75-08-1</td>
<td>Ethyl Mercaptan</td>
<td>0 - 0.0025</td>
</tr>
</tbody>
</table>

Section 4 - First Aid Measures

First Aid: Eyes
Direct contact with liquid propane can result in eye burns.
In case of contact with eyes, hold eyelids open to allow liquid to evaporate and gently flush with lukewarm water.
Cover eyes to protect from light. Seek immediate medical attention.

First Aid: Skin
Direct contact with liquid propane can result in skin burns (frostbite).
Remove contaminated clothing. In case of blistering, frostbite or freeze burns seek immediate medical attention.

First Aid: Ingestion
Risk of ingestion is extremely low. However, if oral exposure occurs, seek immediate medical assistance.

First Aid: Inhalation
This product is classified as a simple asphyxiant. High vapor concentrations may produce a reversible central nervous system depression (anesthesia) and asphyxiation.
Remove person to fresh air. If person is not breathing, provide artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.

Section 5 - Fire Fighting Measures

General Fire Hazards
See Section 9 for Flammability Properties.
Liquid releases flammable vapors at well below ambient temperatures and readily forms a flammable mixture with air. Dangerous fire and explosion hazard when exposed to heat, sparks or flame. Vapors are heavier than air and may travel long distances to a point of ignition and flash back.

Hazardous Combustion Products
Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke).

Extinguishing Media
Use extinguishing media suitable for the surrounding material, preferably or, any extinguisher suitable for Class B fires, dry chemical, firefighting foam, CO2, and other gaseous agents. However, fire should not be extinguished unless flow of gas can be immediately stopped.

Unsuitable Extinguishing Media
None
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Fire Fighting Equipment/Instructions
Gas fires should not be extinguished unless flow of gas can be immediately stopped. Shut off gas source and allow gas to burn out. If spill or leak has not ignited, determine if water spray may assist in dispersing gas or vapor to protect personnel attempting to stop leak. Use water to cool equipment, surfaces and containers exposed to fire and excessive heat. For large fire the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Isolate area, particularly around ends of storage vessels. Let vessel, tank car or container burn unless leak can be stopped. Withdraw immediately in the event of a rising sound from a venting safety device. Large fires typically require specially trained personnel and equipment to isolate and extinguish the fire.

Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH- approved pressure-demand self-contained breathing apparatus with full face piece and full protective clothing.

Section 6 - Accidental Release Measures

Recovery and Neutralization
Stop the source of the release, if safe to do so.

Materials and Methods for Clean-Up
Do not flush down sewer or drainage systems. Do not touch spilled liquid (frostbite/freeze burn hazard!). Consider the use of water spray to disperse vapors. Isolate the area until gas has dispersed. Ventilate and gas test area before entering.

Emergency Measures
Evacuate nonessential personnel and secure all ignition sources. No road flares, smoking or flames in hazard area. Consider wind direction, stay upwind and uphill, if possible. Evaluate the direction of product travel. Vapor cloud may be white, but color will dissipate as cloud disperses - fire and explosion hazard is still present!

Personal Precautions and Protective Equipment
Do not touch spilled liquid (frostbite/freeze burn hazard!).

Environmental Precautions
Do not flush down sewer or drainage systems.

Prevention of Secondary Hazards
None

Section 7 - Handling and Storage

Handling Procedures
Keep away from flame, sparks, ignition sources and excessive temperatures. Use only in well ventilated areas.

Storage Procedures
Store only in approved containers. Keep away from flame, sparks, excessive temperatures and open flame. Keep containers closed and clearly labeled. Empty product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition.

Incompatibilities
Keep away from strong oxidizers, ignition sources and heat. Explosion hazard when exposed to chlorine dioxide. Heating barium peroxide with propane causes violent exothermic reaction. Heated chlorine-propane mixtures are explosive under some conditions.
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Section 8 - Exposure Controls / Personal Protection

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

Ethane (74-84-0)
  ACGIH: 1000 ppm TWA (listed under Aliphatic hydrocarbon gases: Alkane C1-4)

Propylene (115-07-1)
  ACGIH: 500 ppm TWA

Engineering Measures
Use adequate ventilation to keep gas and vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces. Use explosion-proof equipment and lighting in classified/controlled areas.

Personal Protective Equipment: Respiratory
Use a NIOSH approved positive-pressure, supplied air respirator with escape bottle or self-contained breathing apparatus (SCBA) for gas concentrations above occupational exposure limits, for potential for uncontrolled release, if exposure levels are not known, or in an oxygen-deficient atmosphere. CAUTION: Flammability limits (i.e., explosion hazard) should be considered when assessing the need to expose personnel to concentrations requiring respiratory protection.

Personal Protective Equipment: Hands
Use cold-impervious, insulating gloves where contact with liquid may occur.

Personal Protective Equipment: Eyes
Where there is a possibility of liquid contact, wear splash-proof safety glasses and face shield.

Personal Protective Equipment: Skin and Body
Where contact with liquid may occur, wear appropriate cold insulating protective clothing and face shield.

Section 9 - Physical & Chemical Properties

| Appearance: | Colorless |
| Physical State: | Gas |
| Max Vapor Pressure: | 208 psig @ 100 °F (37.8 °C) |
| Boiling Point: | -43.8°F (-42.1°C) |
| Solubility (H2O): | Slight (0.1 to 1.0%) |
| Expansion Ratio: | 1 to 270 (from liquid to gas @ 14.7 psia) |
| Evaporation Rate: | ND |
| Octanol/H2O Coeff.: | ND |
| Flash Point Method: | PMCC |
| Upper Flammability Limit (UFL): | 9.8% |
| Lower Flammability Limit (LFL): | 2.15% |
| Odor: | Odorless |
| pH: | ND |
| Vapor Density: | 1.56 @ 32°F (0°C) |
| Molecular Weight: | 44.096 |
| Specific Gravity: | 1.52 (Air = 1) |
| Burning Rate: | ND |
| VOC: | ND |
| Flash Point: | -156°F (-104 °C) |
| Auto Ignition: | 842°F (450°C) |
Material Name: Propane

Section 10 - Chemical Stability & Reactivity Information

Chemical Stability
This is a stable material.

Hazardous Polymerization
Will not occur.

Conditions to Avoid
Keep away from strong oxidizers, ignition sources and heat.

Incompatible Products
Explosion hazard when exposed to chlorine dioxide. Heating barium peroxide with propane causes violent exothermic reaction. Heated chlorine-propane mixtures are explosive under some conditions.

Hazardous Decomposition Products
Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke) may be formed during combustion.

Section 11 - Toxicological Information

Acute Toxicity
A: General Product Information
Propane exhibits some degree of anesthetic action and is mildly irritating to the mucous membranes. At high concentrations propane acts as a simple asphyxiant without other significant physiological effects. High concentrations may cause death due to oxygen depletion.

Potential Health Effects: Skin Corrosion Property/Stimulativeness
Vapors are not irritating. Direct contact to skin or mucous membranes with liquefied product or cold vapor may cause freeze burns and frostbite. Contact to mucous membranes with liquefied product may cause frostbite and freeze burns. Signs of frostbite include a change in the color of the skin to gray or white, possibly followed by blistering. Skin may become inflamed and painful.

Potential Health Effects: Eye Critical Damage/Stimulativeness
Vapors are not irritating. However, contact with liquid or cold vapor may cause frostbite, freeze burns, and permanent eye damage.

Potential Health Effects: Ingestion
Ingestion is unlikely. Contact with mucous membranes with liquefied product may cause frostbite and freeze burns.

Potential Health Effects: Inhalation
This product is considered to be non-toxic by inhalation. Inhalation of high concentrations may cause central nervous system depression such as dizziness, drowsiness, headache, and similar narcotic symptoms, but no long-term effects. Numbness, a "chilly" feeling, and vomiting have been reported from accidental exposures to high concentrations. This product is a simple asphyxiant. In high concentrations it will displace oxygen from the breathing atmosphere, particularly in confined spaces. Signs of asphyxiation will be noticed when oxygen is reduced to below 16%, and may occur in several stages. Symptoms may include rapid breathing and pulse rate, headache, dizziness, visual disturbances, mental confusion, incoordination, mood changes, muscular weakness, tremors, cyanosis, narcosis and numbness of the extremities. Unconsciousness leading to central nervous system injury and possibly death will occur when the atmospheric oxygen concentration is reduced to about 6% to 8% or less.

WARNING: The burning of any hydrocarbon as a fuel in an area without adequate ventilation may result in hazardous levels of combustion products, including carbon monoxide, and inadequate oxygen levels, which may cause unconsciousness, suffocation, and death.
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Respiratory Organs Sensitization/Skin Sensitization
This product is not reported to have any skin sensitization effects.

Generative Cell Mutagenicity
This product is not reported to have any mutagenic effects.

Carcinogenicity
A: General Product Information
This product is not reported to have any carcinogenic effects.

Reproductive Toxicity
This product is not reported to have any reproductive toxicity effects.

Specified Target Organ General Toxicity: Repeated Exposure
This product is not reported to have any specific target organ repeat effects.

Aspiration Respiratory Organs Hazard
This product is not reported to have any aspiration hazard effects.

Section 12 - Ecological Information

Ecotoxicity
A: General Product Information
Liquid release is only expected to cause localized, non-persistent environmental damage, such as freezing. Biodegradation of this product may occur in soil and water. Volatilization is expected to be the most important removal process in soil and water. This product is expected to exist entirely in the vapor phase in ambient air.

B: Component Analysis - Ecotoxicity - Aquatic Toxicity
No ecotoxicity data is available for this product's components.

Persistence/Degradability
No information available.

Bioaccumulation
No information available.

Mobility in Soil
No information available.

Section 13 - Disposal Considerations

Waste Disposal Instructions
See Section 7 for Handling Procedures. See Section 8 for Personal Protective Equipment recommendations.

Disposal of Contaminated Containers or Packaging
Dispose of contents/container in accordance with local/regional/national/international regulations.

Section 14 - Transportation Information

DOT Information
UN #: 1075 or 1978 Hazard Class: 2.1
Shipping Name: Petroleum Gases, Liquefied
Placard:
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Material Name: Propane

Section 15 - Regulatory Information

Regulatory Information

Component Analysis

TSCA Inventory Status
All components are either listed on the US TSCA Inventory, or are not required under TSCA.

SARA Section 302/304 (Extremely Hazardous Substances)
This material does not contain any chemicals subject to the reporting requirements.

SARA Section 311/312 (EPCRA) – Hazard Classes

<table>
<thead>
<tr>
<th>Acute Health</th>
<th>Chronic Health</th>
<th>Fire</th>
<th>Sudden Release of Pressure</th>
<th>Reactive</th>
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<tr>
<td>--</td>
<td>--</td>
<td>X</td>
<td>X</td>
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</tr>
</tbody>
</table>

SARA SECTION 313 - SUPPLIER NOTIFICATION
This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372:

INGREDIENT NAME (CAS NUMBER) | CONCENTRATION PERCENT BY VOLUME
Propylene (115-07-1) | 30 max

NOTE: EPA's Petroleum Exclusion applies to this material (CERCLA 101(14)) and no reporting is required.

State Regulations

Component Analysis - State
The following components appear on one or more of the following state hazardous substances lists:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>CA</th>
<th>MA</th>
<th>MN</th>
<th>NJ</th>
<th>PA</th>
<th>RI</th>
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<tbody>
<tr>
<td>Propane</td>
<td>74-98-6</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Ethane</td>
<td>74-84-0</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Propylene</td>
<td>115-07-1</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
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Component Analysis - WHMIS IDL
No components are listed in the WHMIS IDL.

Additional Regulatory Information

Component Analysis - Inventory

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>TSCA</th>
<th>CAN</th>
<th>EU</th>
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<tbody>
<tr>
<td>Propane</td>
<td>74-98-6</td>
<td>Yes</td>
<td>DSL</td>
<td>EINECS</td>
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<tr>
<td>Ethane</td>
<td>74-84-0</td>
<td>Yes</td>
<td>DSL</td>
<td>EINECS</td>
</tr>
<tr>
<td>Propylene</td>
<td>115-07-1</td>
<td>Yes</td>
<td>DSL</td>
<td>EINECS</td>
</tr>
</tbody>
</table>
Safety Data Sheet

Material Name: Propane

*** Section 16 - Other Information ***

NFPA® Hazard Rating

<table>
<thead>
<tr>
<th>Category</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>2</td>
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<tr>
<td>Fire</td>
<td>4</td>
</tr>
<tr>
<td>Reactivity</td>
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</tbody>
</table>

* * * * * * * * * * *

HMIS® Hazard Rating

<table>
<thead>
<tr>
<th>Category</th>
<th>Rating</th>
<th>Description</th>
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<tbody>
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<td>Health</td>
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<td>Moderate</td>
</tr>
<tr>
<td>Fire</td>
<td>4</td>
<td>Severe</td>
</tr>
<tr>
<td>Physical</td>
<td>0</td>
<td>Minimal</td>
</tr>
</tbody>
</table>

Key/Legend

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act; EPA = Environmental Protection Agency; EPCRA = Emergency Planning and Community Right-to-Know Act; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; NJTSR = New Jersey Trade Secret Registry; SARA = Superfund Amendments and Reauthorization Act (EPA); TSCA = Toxic Substance Control Act; EU = European Union; CAN = Canada

Literature References

None

Other Information

Information presented herein has been compiled from sources considered to be dependable, and is accurate and reliable to the best of our knowledge and belief, but is not guaranteed to be so. Since conditions of use are beyond our control, we make no warranties, expressed or implied, except those that may be contained in our written contract of sale or acknowledgment.

Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material, even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in their use of the material.

Issue Information

This Safety Data Sheet supersedes all previous editions.

Issued: March 20, 2017

Issued by: Ferrellgas Safety Department

Ferrellgas
One Liberty Plaza
Liberty, MO 64068

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Revision Date 03/20/2017