SECTION 1: IDENTIFICATION

Product identifier used on the label:
Product Name: Isobutane
SDS Manufacturer Number: 245280

Other means of identification:
Synonyms: IsoC4; IC4; Isobutane (Polymerization Grade); Methylpropane, Iso

Recommended use of the chemical and restrictions on use:
Product Use/Restriction: Liquefied petroleum gas

Chemical manufacturer address and telephone number:
Manufacturer Name: Conoco Phillips
Address: 600 N. Dairy Ashford
Houston, TX 77079-1175
Website: www.conocophillips.com
General Phone Number: 855-244-0762..........E-mail: SDS@conocophillips.com

Emergency phone number:
Emergency Phone Number: Chemtrec: 800-424-9300 (24 Hours)

SECTION 2: HAZARD(S) IDENTIFICATION

Classification of the chemical in accordance with CFR 1910.1200(d)(f):
GHS Pictograms:

Signal Word: DANGER.
GHS Class: Flammable gases., Category 1. Compressed gases under pressure...
Simple Asphyxiant.
Hazard Statements: H220 - Extremely flammable gas.
H280 - Contains gas under pressure; may explode if heated.
Precautionary Statements: 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.
P403 - Store in a well-ventilated place.
P410+P403 - Protect from sunlight. Store in a well-ventilated place.

Hazards not otherwise classified that have been identified during the classification process:

Information related to product mixture

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

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Mixtures:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS#</th>
<th>Ingredient Percent</th>
<th>EC Num.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isobutane</td>
<td>75-28-5</td>
<td>&gt; 95 %</td>
<td></td>
</tr>
<tr>
<td>Propane</td>
<td>74-98-6</td>
<td>&lt; 3 %</td>
<td></td>
</tr>
<tr>
<td>n-Butane</td>
<td>106-97-8</td>
<td>&lt; 5 %</td>
<td></td>
</tr>
</tbody>
</table>

Product Code: 245280
Revision: 10/08/2015
SECTION 4: FIRST AID MEASURES

Description of necessary measures:

Eye Contact: For contact with the liquefied gas, remove contact lenses if present and easy to do, hold eyelids apart and gently flush the affected eye(s) with lukewarm water. Seek immediate medical attention.

Skin Contact: Liquefied gases may cause cryogenic burns or injury. Treat burned or frostbitten skin by flushing or immersing the affected area(s) in lukewarm water. Do not rub affected area. Do not remove clothing that adheres due to freezing. After sensation has returned to the frostbitten skin, keep skin warm, dry, and clean. If blistering occurs, apply a sterile dressing. Seek immediate medical attention.

Inhalation: (Breathing): If respiratory symptoms develop, move victim away from source of exposure and into fresh air in a position comfortable for breathing. If breathing is difficult, oxygen or artificial respiration should be administered by qualified personnel. If symptoms persist, seek medical attention.

Ingestion: (Swallowing): This material is a gas under normal atmospheric conditions and ingestion is unlikely.

Indication of immediate medical attention and special treatment needed:

Note to Physicians: Epinephrine and other sympathomimetic drugs may initiate cardiac arrhythmias in persons exposed to high concentrations of hydrocarbon solvents (e.g., in enclosed spaces or with deliberate abuse). The use of other drugs with less arrhythmogenic potential should be considered. If sympathomimetic drugs are administered, observe for the development of cardiac arrhythmias.

Most important symptoms and effects

Acute: Anesthetic effects at high concentrations.

Delayed: None known or anticipated. See Section 11 for information on effects from chronic exposure, if any.

SECTION 5: FIRE FIGHTING MEASURES

Suitable and unsuitable extinguishing media:

Suitable Extinguishing Media: Dry chemical or carbon dioxide is recommended. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces.

Specific hazards arising from the chemical:

Hazardous Combustion Byproducts: Combustion may yield smoke, carbon monoxide, and other products of incomplete combustion. Oxides of nitrogen and sulfur may also be formed.

Unusual Fire Hazards: Extremely flammable. Contents under pressure. This material can be ignited by heat, sparks, flames, or other sources of ignition (e.g., static electricity, pilot lights, mechanical/electrical equipment, and electronic devices such as cell phones, computers, calculators, and pagers which have not been certified as intrinsically safe). Vapors may travel considerable distances to a source of ignition where they can ignite, flash back, or explode. May create vapor/air explosion hazard indoors, in confined spaces, outdoors, or in sewers. If container is not properly cooled, it can rupture in the heat of a fire. Drains can be plugged and valves made inoperable by the formation of ice if rapid evaporation of large quantities of the liquefied gas occurs. Do not allow run-off from fire fighting to enter drains or water courses - may cause explosion hazard in drains and may reignite.

Firefighting Instructions: For fires beyond the initial stage, emergency responders in the immediate hazard area should wear protective clothing. When the potential chemical hazard is unknown, in enclosed or confined spaces, a self contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8). Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done safely. If this cannot be done, allow fire to burn. Move undamaged containers from immediate hazard area if it can be done safely. Stay away from ends of container. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Cool equipment exposed to fire with water, if it can be done safely.

NFPA Ratings:

NFPA Health: 1
NFPA Flammability: 4
NFPA Reactivity: 0

Notes:

NFPA 704 Hazard Class:
(0-Minimal, 1-Slight, 2-Moderate, 3-Serious, 4-Severe)

See Section 9 for Flammable Properties including Flash Point and Flammable (Explosive) Limits

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:

Personnel Precautions: Extremely flammable. Spillages 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 if safe to do so. The use of explosion-proof electrical equipment is recommended. Beware of accumulation of gas in low areas or contained areas, where explosive concentrations may occur. Prevent from entering drains or any place where accumulation may occur. Ventilate area and allow to evaporate. Stay upwind and away from spill/release. Avoid direct contact with material. For large spillages, notify persons down wind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Wear

Revision: 10/08/2015

Product Code: 245280

Isobutane
Isobutane

SECTION 9 : PHYSICAL and CHEMICAL PROPERTIES

PHYSICAL AND CHEMICAL PROPERTIES:

Physical State: Liquefied Gas
Color: Colorless

SECTION 8: EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE GUIDELINES:

Information related to product mixture:

Guideline Info: Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

Isobutane:
Guideline ACGIH: TWA: 1000 ppm as Aliphatic Hydrocarbon Gases: Alkane (C1-C4)
Guideline OSHA: TWA: 1000 ppm TWA: 1800 mg/m³

Propane:
Guideline ACGIH: TWA: 1000 ppm as Aliphatic Hydrocarbon Gases: Alkane (C1-C4)

Appropriate engineering controls:

If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional engineering controls may be required.

Individual protection measures:

Eye/Face Protection: The use of eye protection (such as splash goggles) that meets or exceeds ANSI Z87.1 is recommended when there is potential liquid contact to the eye. Depending on conditions of use, a face shield may be necessary.
Skin Protection Description: Wear thermal insulating gloves and face shield or eye protection when working with materials that present thermal hazards (hot or cold).
Respiratory Protection: A NIOSH approved, self-contained breathing apparatus (SCBA) or equivalent operated in a pressure demand or other positive pressure mode should be used in situations of oxygen deficiency (oxygen content less than 19.5 percent), unknown exposure concentrations, or situations that are immediately dangerous to life or health (IDLH).

A respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed whenever workplace conditions warrant a respirator’s use.

Notes: Suggestions provided in this section for exposure control and specific types of protective equipment are based on readily available information. Users should consult with the specific manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial hygiene, safety, or engineering professionals.
Odor: No distinct odor
Odor Threshold: No Data
Boiling Point: 11 deg F/-12 deg C
Melting Point: No Data
Specific Gravity: (Water=1): 0.56 @ 60 deg F (15.6 deg C) (approximate)
Solubility: negligible
Vapor Density: (Air=1): Approximately 2
Vapor Pressure: 70-75 psia (Reid VP) @ 100 deg F/37.8 deg C
Percent Volatile: 100%
Evaporation Rate: (nBuAc=1): Gas at normal ambient conditions
pH: Not Applicable
Coefficient of Water/Oil Distribution: Partition Coefficient (n-octanol/water) (Kow): No data
Flash Point: -117 deg F/-83 deg C
Flash Point Method: (estimate)
Lower Flammable/Explosive Limit: (vol % in air): 2.0
Upper Flammable/Explosive Limit: (vol % in air): 8.8
Auto Ignition Temperature: 860 deg F/460 deg C
9.2. Other information:
Notes: Note: Unless otherwise stated, values are determined at 20 deg C (68 deg F) and 760 mm Hg (1 atm). Data represent typical values and are not intended to be specifications.

SECTION 10: STABILITY and REACTIVITY

Chemical Stability: Stable under normal ambient and anticipated conditions of use.
Possibility of hazardous reactions:
Hazardous Polymerization: Not known to occur.
Conditions to Avoid:
Conditions to Avoid: Avoid all possible sources of ignition. Heat will increase pressure in the storage tank.
Incompatible Materials:
Incompatible Materials: Materials to Avoid: Avoid contact with acids, aluminum chloride, chlorine, chlorine dioxide, halogens and oxidizing agents.
Hazardous Decomposition Products:
Special Decomposition Products: Not anticipated under normal conditions of use.

SECTION 11: TOXICOLOGICAL INFORMATION

Information related to product mixture:
Eye: Not expected to be irritating. Contact with the liquefied or pressurized gas may cause momentary freezing followed by swelling and eye damage.
Skin: Skin Absorption:
Hazard: Skin absorption is not anticipated
LD50 Data: Not Applicable
Not expected to be irritating. Contact with the liquefied or pressurized gas may cause frostbite (cold burn).
Inhalation:
Hazard: Unlikely to be harmful
Additional Information: Asphyxiant. High concentrations in confined spaces may limit oxygen available for breathing. See Signs and Symptoms.
LC50: > 20,000 ppm (gas)
Ingestion:
Ingestion (Swallowing):
Hazard: Ingestion is not anticipated
LD50 Data: Not Applicable
Sensitization:
Skin Sensitization: Skin contact is not anticipated.
Respiratory Sensitization: Not expected to be a respiratory sensitizer.
Carcinogenicity:
Not expected to cause cancer. This substance is not listed as a carcinogen by IARC, NTP or OSHA.
Mutagenicity:
Germ Cell Mutagenicity: Not expected to cause heritable genetic effects.
Reproductive Toxicity:
Not expected to cause reproductive toxicity.
Other Toxicological Information:
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.
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.

**Isobutane:**

**Reproductive Toxicity:**
No adverse developmental effects were observed in rats exposed to concentrations of isobutane as high as 9000 ppm. Fertility and mating indices may have been affected at 9000 ppm but no effects were observed at 3000 ppm (NOAEL).

**Target Organ Repeated Exposures:**
No systemic or neurotoxic effects were noted in rats exposed to concentrations of isobutane as high as 9,000 ppm for 28 days.

**Propane:**

**Reproductive Toxicity:**
No adverse reproductive or developmental effects were observed in rats exposed to propane; no observed adverse effect level = 12,000 ppm.

**Target Organ Repeated Exposures:**
No systemic or neurotoxic effects were noted in rats exposed to concentrations of propane as high as 12,000 ppm for 28 days.

**n-Butane:**

**Reproductive Toxicity:**
No adverse reproductive or developmental effects were observed in rats exposed to butane; no observed adverse effect level = 12,000 ppm.

**Target Organ Repeated Exposures:**
No systemic or neurotoxic effects were noted in rats exposed to concentrations of butane as high as 9,000 ppm for 28 days.

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**SECTION 12: ECOLOGICAL INFORMATION**

**Ecotoxicity:**
Petroleum gases will readily evaporate from the surface and would not be expected to have significant adverse effects in the aquatic environment. Classification: No classified hazards.

**Persistence and degradability:**
Persistence and Degradability: The hydrocarbons in this material are expected to be inherently biodegradable. In practice, hydrocarbon gases are not likely to remain in solution long enough for biodegradation to be a significant loss process. Hydrogen sulfide, if present in refinery gas streams, will be rapidly oxidized in water and insoluble sulfides precipitated from water when metallic radicals are present.

**Bioaccumulative potential:**
Bioaccumulative Potential: Since the log Kow values measured for refinery gas constituents are below 3, they are not regarded as having the potential to bioaccumulate.

**Mobility in soil:**
Mobility In Soil: Due to the extreme volatility of petroleum gases, air is the only environmental compartment in which they will be found. In air, these hydrocarbons undergo photodegradation by reaction with hydroxyl radicals with half-lives ranging from 3.2 days for n-butane to 7 days for propane.

**Other Adverse Effects:**
None anticipated.

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**SECTION 13: DISPOSAL CONSIDERATIONS**

**Description of waste:**
Information related to product mixture:
This material is a gas and would not typically be managed as a waste.

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**SECTION 14: TRANSPORT INFORMATION**

**DOT Shipping Name:**
Shipping Description: UN1969, Isobutane, 2.1
Non-Bulk Package Marking: Isobutane, UN1969
Non-Bulk Package Labeling: Flammable gas
Bulk Package/Placard Marking: Flammable gas / 1969
Packaging - References: 49 CFR: 173.306; 173.304; 173.314 & .315 (Exceptions; Non-bulk; Bulk)
Hazardous Substance: See Section 15 for RQ’s
Emergency Response Guide: 115

Note: For domestic transportation only, UN1075 may be substituted for the UN number shown as long as the substitution is consistent on package markings, shipping papers, and emergency response information. See 49 CFR 172.102 Special Provision 19.

Containers of NON-ODORIZED liquefied petroleum gas must be marked either NONODORIZED or NOT ODORIZED as of September 30, 2006. [49 CFR 172.301(f), 326(d), 330(c) and 338(e)]

The following alternate shipping description order may be used until January 1, 2013:
Proper Shipping Name, Hazard Class or Division, (Subsidiary Hazard if any), UN or NA number, Packing Group
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable
Other shipping description elements may be required for DOT compliance.

**IATA Shipping Name:**
UN/ID : UN1969
Proper Shipping Name: Isobutane
Hazard Class/Division: 2.1
Non-Bulk Package Marking: Isobutane, UN1969
Labels: Flammable gas
SECTION 15 : REGULATORY INFORMATION

Safety, health and environmental regulations specific for the product:

Information related to product mixture:

- **TSCA Inventory Status:** All components are either listed on the US TSCA Inventory, or are not regulated under TSCA
- **TSCA 12(b) Export Notification:** U.S. Export Control Classification Number: EAR99
- **CERCLA Section 302:** CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs (in pounds): This material does not contain any chemicals subject to the reporting requirements of SARA 302 and 40 CFR 372.

**Section 311/312 Hazard Categories:**
- **Acute Health:** Yes
- **Chronic Health:** No
- **Fire Hazard:** Yes
- **Pressure Hazard:** Yes
- **Reactive Hazard:** No

**Section 313:**
- **CERCLA/SARA - Section 313 and 40 CFR 372:** This material does not contain any chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372.
- **California PROP 65:** California Proposition 65: This material does not contain any chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm at concentrations that trigger the warning requirements of California Proposition 65.

**California DSL:**
- All components are either on the DSL, or are exempt from DSL listing requirements

**Canada WHMIS:**
- WHMIS Hazard Class:
  - A - Compressed Gas
  - B1 - Flammable Gases

SECTION 16 : ADDITIONAL INFORMATION

**HMIS Ratings:**

**HMIS Personal Protection:**

- **Health Hazard**
- **Fire Hazard**
- **Reactivity**
- **Personal Protection**

**Other Information:**
- **SDS Number:** 245280
- **SDS Revision Date:** October 08, 2015
- **MSDS Revision Notes:** Supersedes: 02-Apr-2012 Format change

**Guide to Abbreviations:**
- ACGIH = American Conference of Governmental Industrial Hygienists; CASRN = Chemical Abstracts Service Registry Number; CEILING = Ceiling Limit (15 minutes); CERCLA = The Comprehensive Environmental Response, Compensation, and Liability Act; EPA = Environmental Protection Agency; GHS = Globally Harmonized System; IARC = International Agency for Research on Cancer; INSLH = National Institute for Health and Safety at Work; IOPC = International Oil Pollution Compensation; LEL = Lower Explosive Limit; NE = Not Established; NFPA = National Fire Protection Association; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit (OSHA); SARA = Superfund Amendments and Reauthorization Act; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value (ACGIH); TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; WHMIS = Worker Hazardous Materials Information System (Canada)

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