SAFETY DATA SHEET

1. Identification

GHS Product identifier: Butene-2 (SCRS)

Other means of identification
Common name(s), synonym(s): Liquefied Petroleum Gas (butylenes); Raffinate III (Butene-2); Spent butene-SCRS; St. Clair Raffinate III Butene Stream
SDS number: NOVA-0027

Recommended use and restriction on use
Recommended use: Petrochemical industry: Raw material.
Restrictions on use: All uses other than the identified.

Manufacturer/Importer/Supplier/Distributor Information

Manufacturer
Company Name: NOVA Chemicals
Address: P.O. Box 2518, Station M Calgary, Alberta, Canada T2P 5C6
Telephone: Product Information: 1-412-490-4063
SDS Information Email: msdsemail@novachem.com

Emergency telephone number:
1-800-561-6682, 1-403-314-8767 (NOVA Chemicals) (24 hours)
1-800-424-9300 (CHEMTREC-USA) (24 hours)

2. Hazard(s) Identification

Hazard Classification

Physical Hazards
Flammable gas Category 1
Gases under pressure Liquefied gas

Health Hazards
Germ Cell Mutagenicity Category 1B
Carcinogenicity Category 1A

OSHA hazard(s)
Simple asphyxiant

Environmental Hazards
Acute hazards to the aquatic environment Category 3
Chronic hazards to the aquatic environment Category 3

Label Elements

Hazard Symbol:
Signal Word: Danger

Hazard Statement: Extremely flammable gas.
Contains gas under pressure; may explode if heated.
May displace oxygen and cause rapid suffocation.
May cause genetic defects.
May cause cancer.
Harmful to aquatic life with long lasting effects.

Precautionary Statements:

Prevention: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection.

Response: IF exposed or concerned: Get medical advice/attention. Leaking gas fire: Do not extinguish, unless leak can be stopped safely. In case of leakage, eliminate all ignition sources.

Storage: Store locked up. Protect from sunlight. Store in a well-ventilated place.

Disposal: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Other hazards which do not result in GHS classification: Contact with liquefied gas may cause irritation and/or frostbite.

### 3. Composition/information on ingredients

<table>
<thead>
<tr>
<th>Mixtures</th>
<th>Common name and synonyms</th>
<th>CAS number</th>
<th>Content in percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Butene</td>
<td>Butylene</td>
<td>107-01-7</td>
<td>60 - 96%</td>
</tr>
<tr>
<td>1-Butene</td>
<td>Butene-1</td>
<td>106-98-9</td>
<td>1 - 32%</td>
</tr>
<tr>
<td>n-Butane</td>
<td>Butane</td>
<td>106-97-8</td>
<td>1 - 10%</td>
</tr>
<tr>
<td>Cyclohexane</td>
<td>Benzene hexahydride</td>
<td>110-82-7</td>
<td>0.1 - 5%</td>
</tr>
<tr>
<td>Methane</td>
<td>Methyl hydride</td>
<td>74-82-8</td>
<td>0.1 - 2%</td>
</tr>
<tr>
<td>Ethane</td>
<td>Methylmethane</td>
<td>74-84-0</td>
<td>0.1 - 2%</td>
</tr>
<tr>
<td>Propane</td>
<td>Dimethylmethane</td>
<td>74-98-6</td>
<td>0.1 - 2%</td>
</tr>
<tr>
<td>1,3-Butadiene</td>
<td>Vinyllethylene</td>
<td>106-99-0</td>
<td>0.1 - 0.2%</td>
</tr>
</tbody>
</table>

* All concentrations are percent by weight.

Additional Information: This product is considered hazardous by the OSHA Hazard Communication Standard, (29 CFR 1910.1200).

### 4. First-aid measures

Ingestion: Ingestion of this product is not a likely route of exposure. Do NOT induce vomiting. Seek medical attention.

Inhalation: IF INHALED: Remove person to fresh air and keep comfortable for breathing. Seek medical attention.
Skin Contact: Contact with liquefied gas may cause irritation and/or frostbite. Seek medical attention immediately in the event of frostbite. IF ON SKIN: Wash with plenty of soap and water. Thaw frosted parts with lukewarm water. Do not rub affected area. Remove non-adhering contaminated clothing. Do not remove adherent material or clothing. Seek medical attention.

Eye contact: Contact with liquefied gas may cause irritation and/or frostbite. Seek medical attention immediately in the event of frostbite. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Seek medical attention.

Most important symptoms/effects, acute and delayed


Indication of immediate medical attention and special treatment needed

Treatment: For more detailed medical emergency support information call 1-800-561-6682 or 1-403-314-8767 (24 hours, NOVA Chemicals Emergency Response). Treat unconsciousness, frostbite, nausea, hypotension, seizures and cardiac arrhythmias in the conventional manner. Sympathomimetics or catecholamines should be avoided or used with caution (lowest effective dose) because of possible cardiac sensitization. Administer oxygen by mask if there is respiratory distress.

5. Fire-fighting measures

General Fire Hazards: Extremely flammable liquefied gas. Vapors may travel considerable distance to a source of ignition and flash back. DO NOT ATTEMPT TO EXTINGUISH A GAS FIRE UNLESS LEAK SOURCE CAN BE ISOLATED AND SHUT OFF. Be aware of possibility of reignition. Vapors may form explosive mixture with air. Consider need for immediate emergency isolation and evacuation. 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. Keep containers away from source of heat or fire. Contains gas under pressure; may explode if heated.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Use dry chemical, foam, carbon dioxide (CO2) and water fog to extinguish. Use water to cool fire-exposed containers and to protect personnel.

Unsuitable extinguishing media: Direct addition of water (or any other room temperature liquid) to the liquefied gas will cause a BLEVE (boiling liquid expanding vapor explosion).

Specific hazards arising from the chemical: Upon combustion, this product emits carbon monoxide, carbon dioxide, low molecular weight hydrocarbons.

Special protective equipment and precautions for firefighters
Special fire fighting procedures:
Keep upwind. Keep unauthorized personnel away. Move containers from fire area if you can do so without risk. Fight fire from maximum distance or use unmanned holders or monitor nozzles. Immediately withdraw in case of fire and container venting or heat discoloration of a container. Let uncontrolled fires burn off. Avoid inhaling any smoke and combustion materials. Remove and isolate contaminated clothing and shoes. Cool containers with flooding quantities of water until well after the fire is out. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Reference 2016 Emergency Response Guidebook, Guide No. 115 for additional details and instructions.

Special protective equipment for fire-fighters:
Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures:
Isolate area. Keep unauthorized personnel away. Alert stand-by emergency and fire fighting personnel. Monitor surrounding area for buildup of flammable concentrations in air.

Methods and material for containment and cleaning up:
Wear appropriate personal protective equipment. Do not touch or walk through spilled material. In case of leakage, eliminate all ignition sources. Keep upwind. Keep out of low areas. Stop leak if safe to do so. All equipment used when handling the product must be grounded. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Keep area isolated until any detectable flammable gas has been fully dispersed.

Small Spills: Isolate spill or leak area for 50 to 100 meters (164 to 330 feet).

Large Spills: Consider initial downwind evacuation for at least 800 meters (1/2 mile). Evacuate personnel to upwind of the spill area, and position at a safe distance. Use water spray to reduce gas or divert gas cloud drift.

7. Handling and storage

Precautions for safe handling:
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep container tightly closed. Ground and bond container and receiving equipment. For additional information on equipment bonding and grounding, refer to the American Petroleum Institute (API) Recommended Practice 2003, "Protection Against Ignitions Arising out of Static, Lightning, and Stray Currents" or National Fire Protection Association (NFPA) 77, "Recommended Practice on Static Electricity". Where possible, collect and flare vents. Wear protective gloves/protective clothing/eye protection/face protection. Avoid release to the environment.

Conditions for safe storage, including any incompatibilities:
Store locked up. Protect from sunlight. Store in a well-ventilated place. Keep container tightly closed. Only allow access to authorized persons. Store and handle in properly designed pressure vessels and equipment. Store and use away from heat, sparks, open flame, or any other ignition source. Have appropriate extinguishing capability in storage area (e.g. sprinkler system, portable fire extinguishers) and flammable gas detectors. Storage pressure vessels should be above ground and diked. Store away from incompatible materials. Store according to applicable regulations and standards for flammable materials. Inspect vents during winter conditions for vapor ice buildup.
8. Exposure controls/personal protection

Control Parameters

OCCUPATIONAL EXPOSURE LIMITS

<table>
<thead>
<tr>
<th>Chemical Identity</th>
<th>Type</th>
<th>Exposure Limit Values</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Butene</td>
<td>TWA</td>
<td>250 ppm</td>
<td>US. ACGIH Threshold Limit Values (03 2014)</td>
</tr>
<tr>
<td>1-Butene</td>
<td>TWA</td>
<td>250 ppm</td>
<td>US. ACGIH Threshold Limit Values (03 2014)</td>
</tr>
<tr>
<td>n-Butane</td>
<td>TWA</td>
<td>800 ppm 1,900 mg/m3</td>
<td>US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)</td>
</tr>
<tr>
<td></td>
<td>REL</td>
<td>800 ppm 1,900 mg/m3</td>
<td>US. NIOSH: Pocket Guide to Chemical Hazards (2010)</td>
</tr>
<tr>
<td></td>
<td>STEL</td>
<td>1,000 ppm</td>
<td>US. ACGIH Threshold Limit Values (03 2018)</td>
</tr>
<tr>
<td>Cyclohexane</td>
<td>TWA</td>
<td>100 ppm</td>
<td>US. ACGIH Threshold Limit Values (03 2014)</td>
</tr>
<tr>
<td></td>
<td>PEL</td>
<td>300 ppm 1,050 mg/m3</td>
<td>US. OSHA Table Z-1-A (29 CFR 1910.1000) (02 2006)</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>300 ppm 1,050 mg/m3</td>
<td>US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)</td>
</tr>
<tr>
<td></td>
<td>REL</td>
<td>300 ppm 1,050 mg/m3</td>
<td>US. NIOSH: Pocket Guide to Chemical Hazards (2010)</td>
</tr>
<tr>
<td>Propane</td>
<td>PEL</td>
<td>1,000 ppm 1,800 mg/m3</td>
<td>US. OSHA Table Z-1 Limits for Air</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Contaminants (29 CFR 1910.1000) (02 2006)</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>1,000 ppm 1,800 mg/m3</td>
<td>US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)</td>
</tr>
<tr>
<td></td>
<td>REL</td>
<td>1,000 ppm 1,800 mg/m3</td>
<td>US. NIOSH: Pocket Guide to Chemical Hazards (2010)</td>
</tr>
<tr>
<td>1,3-Butadiene</td>
<td>TWA</td>
<td>2 ppm</td>
<td>US. ACGIH Threshold Limit Values (03 2014)</td>
</tr>
<tr>
<td></td>
<td>OSHA_ACT</td>
<td>0.5 ppm</td>
<td>US. OSHA Specifically Regulated Substances</td>
</tr>
<tr>
<td></td>
<td>STEL</td>
<td>5 ppm</td>
<td>US. OSHA Specifically Regulated Substances</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>1 ppm</td>
<td>US. OSHA Specifically Regulated Substances</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>1,000 ppm 2,200 mg/m3</td>
<td>US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)</td>
</tr>
</tbody>
</table>

**Biological Limit Values**

<table>
<thead>
<tr>
<th>Chemical Identity</th>
<th>Exposure Limit Values</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,3-Butadiene (1,2-</td>
<td>2.5 mg/l (Urine)</td>
<td>ACGIH BEI (03 2014)</td>
</tr>
<tr>
<td>Dihydroxy-4-(N-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>acetylcysteinyl)-butane</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sampling time: End of</td>
<td></td>
<td></td>
</tr>
<tr>
<td>shift.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,3-Butadiene (Mixture</td>
<td>2.5 pmol/g (Hemoglobin</td>
<td>ACGIH BEI (03 2018)</td>
</tr>
<tr>
<td>of N-1- and N-2-</td>
<td>adducts: Sampling</td>
<td></td>
</tr>
<tr>
<td>hydroxybutenyl)valine</td>
<td>time: Not critical.)</td>
<td></td>
</tr>
<tr>
<td>hemoglobin (Hb)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Appropriate Engineering Controls**

Engineering methods to reduce hazardous exposure are preferred controls. Methods include mechanical ventilation (dilution and local exhaust) process or personal enclosure, remote and automated operation, control of process conditions, leak detection and repair systems, and other process modifications. Ensure all exhaust ventilation systems are discharged to outdoors, away from air intakes and ignition sources. Supply sufficient replacement air to make up for air removed by exhaust systems. Administrative (procedure) controls and use of personal protective equipment may also be required.

**Individual protection measures, such as personal protective equipment**

**General information:** Personal protective equipment (PPE) should not be considered a long-term solution to exposure control. Employer programs to properly select, fit, maintain and train employees to use equipment must accompany PPE. Consult a competent industrial hygiene resource, the PPE manufacturer's recommendation, and/or applicable regulations to determine hazard potential and ensure adequate protection.
Eye/face protection: Safety glasses. Chemical goggles under a full-face shield are recommended if contact with liquefied gas is possible.

Skin Protection

Hand Protection: Wear protective gloves. Wear cold insulating gloves.

Other: Wear appropriate clothing to prevent any possibility of skin contact. Wear work clothes with long sleeves and pants. Fire resistant (i.e., Nomex) or natural fiber clothing (i.e., cotton or wool) is recommended. Synthetic clothing can generate static electricity and is not recommended where a flammable vapor release may occur. Wear chemical-resistant safety footwear with good traction to prevent slipping. Static Dissipative (SD) rated footwear is also recommended.

Respiratory Protection: Air supplied breathing apparatus must be used when oxygen concentrations are low or if airborne concentrations exceed OEL.

Hygiene measures: Use effective control measures and PPE to maintain worker exposure to concentrations that are below these limits. Ensure that eyewash stations and safety showers are in close proximity to work locations.

9. Physical and chemical properties

Appearance

Physical state: Gas
Form: Liquefied gas
Color: Colorless
Odor: Odorless, Faint hydrocarbon odor
Odor threshold: No data available.
PH: Not applicable
Melting point/freezing point: -139 °C (-218 °F) (2-Butene)
Initial boiling point and boiling range: 3.7 °C (38.7 °F) (2-Butene)
Flash Point: -73 °C (-99 °F) (ASTM D56 (Tag (Closed Cup))) (2-Butene)
Evaporation rate: No data available.
Flammability (solid, gas): Extremely flammable.

Upper/lower limit on flammability or explosive limits

Flammability limit - upper (%): 10 % (V) (Butenes)
Flammability limit - lower (%): 1.6 % (V) (Butenes)
Vapor pressure: 28 psia (21 °C (70 °F))
Vapor density: 1.9 (0 °C (32 °F)) (Air=1) (estimated)
Density: 600 kg/m3 (2-Butene)
Relative density: 0.6 (20 °C (68 °F)) (Water=1) (2-Butene)
Solubility(ies)

Solubility in water: Practically Insoluble
Solubility (other): No data available.
Partition coefficient (n-octanol/water): 2.3 (2-Butene)
Auto-ignition temperature: 324 °C (615 °F) (2-Butene)
Decomposition temperature: No data available.
Viscosity: not applicable

10. Stability and reactivity

Reactivity: Contact with incompatible materials. Sources of ignition. Exposure to heat.
Chemical Stability: Stable under normal conditions.

Possibility of hazardous reactions: Liquefied gas may explode on contact with hot water (45 °C to 75 °C) (113 °F to 167 °F). Hazardous polymerization not likely to occur except under favorable conditions requiring heat and catalyst.

Conditions to avoid: Keep away from heat, sparks and open flame.

Incompatible Materials: Strong acids. Strong oxidizing agents. Many materials become brittle after contact with liquefied gases and may fail without warning. Carefully select and test equipment, gaskets and hoses periodically to ensure integrity and compatibility.

Hazardous Decomposition Products: Upon decomposition, this product emits carbon monoxide, carbon dioxide, low molecular weight hydrocarbons.

11. Toxicological information

Information on likely routes of exposure

Ingestion: Ingestion of this product is not a likely route of exposure.

Inhalation: Product is not acutely toxic.

Skin Contact: Gas may be mildly irritating. The liquefied form will cause freezing burns (frostbite).

Eye contact: Gas may be mildly irritating. The liquefied form will cause freezing burns (frostbite).

Symptoms related to the physical, chemical and toxicological characteristics

Ingestion: No adverse effects due to ingestion are expected.

Inhalation: Headache, dizziness, nausea, heartbeat irregularities.

Skin Contact: Mild skin irritation. Frostbite.

Eye contact: Mild eye irritation. Frostbite.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral Product: Not classified for acute toxicity based on available data.

Dermal Product: Not classified for acute toxicity based on available data.

Inhalation Product: Not classified for acute toxicity based on available data.

Repeated dose toxicity Product: No data available.

Skin Corrosion/Irritation Product: No data available.

Specified substance(s): 1-Butene Gas may be mildly irritating. Contact with liquid form may cause frostbite.
n-Butane: Gas may be mildly irritating. Contact with the liquefied or pressurized gas may cause frostbite.

Cyclohexane: Mildly Irritating

Methane: Frostbite hazard - rapidly expanding gas or liquid may cause frostbite.

Ethane: Not likely, due to the form of the product.

Propane: Contact with liquid form may cause frostbite.

1,3-Butadiene: Not likely, due to the form of the product. Frostbite hazard - rapidly expanding gas or liquid may cause frostbite.

**Serious Eye Damage/Eye Irritation**

*Product:* No data available.

**Specified substance(s):**

1-Butene: Gas may be mildly irritating. Contact with liquefied gas might cause frostbites, in some cases with tissue damage.

n-Butane: Gas may be mildly irritating. Contact with the liquefied or pressurized gas may cause momentary freezing followed by swelling and eye damage.

Cyclohexane: Mildly Irritating

Methane: Frostbite hazard - rapidly expanding gas or liquid may cause frostbite.

Propane: Contact with liquefied gas might cause frostbites, in some cases with tissue damage.

1,3-Butadiene: Irritant of eyes and mucous membranes. Frostbite hazard - rapidly expanding gas or liquid may cause frostbite.

**Respiratory or Skin Sensitization**

*Product:* No data available.

**Carcinogenicity**

*Product:* May cause cancer.

**IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:**

1,3-Butadiene: Overall evaluation: 1. Carcinogenic to humans.

**US. National Toxicology Program (NTP) Report on Carcinogens:**

1,3-Butadiene: Known To Be Human Carcinogen.

**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):**

1,3-Butadiene: Cancer

**Germ Cell Mutagenicity**

*In vitro Product:* May cause genetic defects.

*In vivo Product:* May cause genetic defects.

**Reproductive toxicity Product:** Not classified.

**Specific Target Organ Toxicity - Single Exposure**

*Product:* No data available.
Specific Target Organ Toxicity - Repeated Exposure

Product: No data available.

Specified substance(s):
- 2-Butene: Nervous System
- 1,3-Butadiene: Liver, Blood, Lungs, ovaries, testes

Aspiration Hazard
Product: not applicable

Other effects: No data available.

12. Ecological information

Ecotoxicity:

Acute hazards to the aquatic environment:

Fish
Product: Harmful to aquatic life.

Aquatic Invertebrates
Product: Harmful to aquatic life.

Toxicity to Aquatic Plants
Product: Harmful to aquatic life.

Chronic hazards to the aquatic environment:

Fish
Product: Harmful to aquatic life with long lasting effects.

Aquatic Invertebrates
Product: Harmful to aquatic life with long lasting effects.

Toxicity to Aquatic Plants
Product: Harmful to aquatic life with long lasting effects.

Persistence and Degradability

Biodegradation
Product: Components are likely to degrade in air within minutes to hours. Butene-2 will degrade rapidly over time in air with a calculated half-life of 2.3 to 3 hours.

BOD/COD Ratio
Product: No data available.

Bioaccumulative potential
Bioconcentration Factor (BCF)
Product: Bioconcentration Factor (BCF): 12 (estimated) (2-Butene)

Partition Coefficient n-octanol / water (log Kow)
Product: 2.3 (2-Butene)

Mobility in soil: Low potential.

Other adverse effects: No data available.
13. Disposal considerations

**Disposal instructions:** Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal. Waste generator is advised to carefully consider hazardous properties and control measures needed for other materials that may be found in the waste.

**Contaminated Packaging:** Check local, federal and state environmental regulations prior to disposal.

14. Transport information

**DOT**
- **UN Number:** UN 1075
- **UN Proper Shipping Name:** Liquefied petroleum gas (butylene) Not Odorized
- **Transport Hazard Class(es):**
  - **Class:** 2.1
  - **Label(s):** 2.1
- **Packing Group:** –
- **Marine Pollutant:** No
- **Special precautions for user:** 2016 Emergency Response Guidebook, Guide No. 115.
- **Reportable quantity**
  - 1,3-Butadiene 10 lbs
  - Cyclohexane 1000 lbs

15. Regulatory information

**US Federal Regulations**

**TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**
None present or none present in regulated quantities.


<table>
<thead>
<tr>
<th>Chemical Identity</th>
<th>OSHA hazard(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,3-Butadiene</td>
<td>eye irritation</td>
</tr>
<tr>
<td></td>
<td>respiratory tract irritation</td>
</tr>
<tr>
<td></td>
<td>Central nervous system</td>
</tr>
<tr>
<td></td>
<td>Cancer</td>
</tr>
<tr>
<td></td>
<td>Flammability</td>
</tr>
</tbody>
</table>

**CERCLA Hazardous Substance List (40 CFR 302.4):**

<table>
<thead>
<tr>
<th>Chemical Identity</th>
<th>Reportable quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyclohexane</td>
<td>1000 lbs.</td>
</tr>
<tr>
<td>1,3-Butadiene</td>
<td>10 lbs.</td>
</tr>
</tbody>
</table>

**Superfund Amendments and Reauthorization Act of 1986 (SARA)**

**Hazard categories**
- Flammable (gases, aerosols, liquids, or solids)
- Gas under pressure
- Germ Cell Mutagenicity
- Carcinogenicity
- Simple asphyxiant

**SARA 302 Extremely Hazardous Substance**
None present or none present in regulated quantities.
### SARA 304 Emergency Release Notification

<table>
<thead>
<tr>
<th>Chemical Identity</th>
<th>Reportable quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyclohexane</td>
<td>1000 lbs.</td>
</tr>
<tr>
<td>1,3-Butadiene</td>
<td>10 lbs.</td>
</tr>
</tbody>
</table>

### SARA 311/312 Hazardous Chemical

<table>
<thead>
<tr>
<th>Chemical Identity</th>
<th>Threshold Planning Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Butene</td>
<td>10000 lbs</td>
</tr>
<tr>
<td>1-Butene</td>
<td>10000 lbs</td>
</tr>
<tr>
<td>n-Butane</td>
<td>10000 lbs</td>
</tr>
<tr>
<td>Cyclohexane</td>
<td>10000 lbs</td>
</tr>
<tr>
<td>Methane</td>
<td>10000 lbs</td>
</tr>
<tr>
<td>Ethane</td>
<td>10000 lbs</td>
</tr>
<tr>
<td>Propane</td>
<td>10000 lbs</td>
</tr>
<tr>
<td>1,3-Butadiene</td>
<td>10000 lbs</td>
</tr>
</tbody>
</table>

### SARA 313 (TRI Reporting)

<table>
<thead>
<tr>
<th>Chemical Identity</th>
<th>Reporting threshold for other users</th>
<th>Reporting threshold for manufacturing and processing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyclohexane</td>
<td>10000 lbs</td>
<td>25000 lbs.</td>
</tr>
<tr>
<td>1,3-Butadiene</td>
<td>10000 lbs</td>
<td>25000 lbs.</td>
</tr>
</tbody>
</table>

### Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)

None present or none present in regulated quantities.

### Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

<table>
<thead>
<tr>
<th>Chemical Identity</th>
<th>Reportable quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Butene</td>
<td>10000 lbs</td>
</tr>
<tr>
<td>1-Butene</td>
<td>10000 lbs</td>
</tr>
<tr>
<td>n-Butane</td>
<td>10000 lbs</td>
</tr>
<tr>
<td>Methane</td>
<td>10000 lbs</td>
</tr>
<tr>
<td>Ethane</td>
<td>10000 lbs</td>
</tr>
<tr>
<td>Propane</td>
<td>10000 lbs</td>
</tr>
<tr>
<td>1,3-Butadiene</td>
<td>10000 lbs</td>
</tr>
</tbody>
</table>

### US State Regulations

#### US. California Proposition 65

WARNING: This product can expose you to chemicals including 1,3-Butadiene; which is [are] known to the State of California to cause cancer and birth defects or other reproductive harm.

For more information go to www.P65Warnings.ca.gov.

#### US. New Jersey Worker and Community Right-to-Know Act

<table>
<thead>
<tr>
<th>Chemical Identity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Butene</td>
</tr>
<tr>
<td>1-Butene</td>
</tr>
<tr>
<td>n-Butane</td>
</tr>
<tr>
<td>Cyclohexane</td>
</tr>
<tr>
<td>Methane</td>
</tr>
<tr>
<td>Ethane</td>
</tr>
<tr>
<td>Propane</td>
</tr>
<tr>
<td>1,3-Butadiene</td>
</tr>
</tbody>
</table>
US. Pennsylvania RTK - Hazardous Substances

Chemical Identity
2-Butene
1-Butene
n-Butane
Cyclohexane
Methane
Ethane
Propane
1,3-Butadiene

Inventory Status
Canada DSL Inventory List: On or in compliance with the inventory
US TSCA Inventory: On or in compliance with the inventory

16. Other information, including date of preparation or last revision

Issue Date: 08/16/2018

Revision Information: 08/16/2018: SDS Update – GHS classification change, Section 3 synonyms added, California Proposition 65 update
12/15/2017: SDS Update – GHS classification change, phrase edits, density added

Version #: 7.2

Abbreviations and acronyms:
ACC = American Chemistry Council; ACGIH = American Conference of Governmental Industrial Hygienists; BOD = Biochemical Oxygen Demand; C = Ceiling; CAS = Chemical Abstracts Service; CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act; CFR = Code of Federal Regulations; COD = Chemical Oxygen Demand; DOT = Department of Transportation; DSL = Domestic Substances List; EC50 = Effective Concentration 50%; EPA = Environmental Protection Agency; GHS = Globally Harmonized System for the Classification and Labelling of Chemicals; HPV = High Production Volume; IARC = International Agency for Research on Cancer; LC50 = Lethal Concentration 50%; LD50 = Lethal Dose 50%; NFPA = National Fire Protection Association; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit; PMCC = Pensky-Martens Closed Cup; PPE = Personal Protective Equipment; RCRA = Resource Conservation and Recovery Act; REL = Recommended Exposure Limit; SARA = Superfund Amendments and Reauthorization Act; SCBA = Self Contained Breathing Apparatus; SDS = Safety Data Sheet; STEL = Short Term Exposure Limit; TLV = Threshold Limit Value; TSCA = Toxic Substances Control Act; TWA = Time Weighted Average

Further Information: For additional information on equipment bonding and grounding, refer to the American Petroleum Institute (API) Recommended Practice 2003, "Protection Against Ignitions Arising out of Static, Lightning, and Stray Currents" or National Fire Protection Association (NFPA) 77, "Recommended Practice on Static Electricity".

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