Section 1 - PRODUCT AND COMPANY IDENTIFICATION

Material Name
1-Butene, Acetylene, cis-2-Butene, Isobutylene and Trans-2-Butene Gas Mixture

Product Use
Industrial and Specialty Gas Applications.

Restrictions on Use
None known.

Details of the supplier of the safety data sheet
MATHESON TRI-GAS, INC.
150 Allen Road, Suite 302
Basking Ridge, NJ 07920
General Information: 1-800-416-2505
Emergency #: 1-800-424-9300 (CHEMTREC)
Outside the US: 703-527-3887 (Call collect)

Section 2 - HAZARDS IDENTIFICATION

Classification in accordance with paragraph (d) of 29 CFR 1910.1200.
Flammable Gases - Category 1
Gases Under Pressure - Compressed gas
Acute Toxicity - Inhalation - Gas - Category 4
Specific Target Organ Toxicity - Single Exposure - Category 3
Simple Asphyxiant

GHS Label Elements
Symbol(s)

Signal Word
Danger

Hazard Statement(s)
Extremely flammable gas.
Contains gas under pressure; may explode if heated.
Harmful if inhaled.
May cause drowsiness or dizziness.
May displace oxygen and cause rapid suffocation.

Precautionary Statement(s)
Prevention
Keep away from heat/sparks/open flame/hot surfaces - No smoking.
Use only outdoors or in a well-ventilated area.
Avoid breathing dust/fume/gas/mist/vapors/spray.

Response
Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
Eliminate all ignition sources if safe to do so.
Safety Data Sheet

Material Name: 1-Butene, Acetylene, cis-2-Butene, Isobutylene and Trans-2-Butene Gas Mixture

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor if you feel unwell.

Storage
Store in a well-ventilated place. Keep container tightly closed. Store locked up. Protect from sunlight.

Disposal
Dispose in accordance with all applicable regulations.

Other Hazards
The rapid release of compressed gas may cause frostbite.

### Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>CAS</th>
<th>Component Name</th>
<th>Percent</th>
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<tbody>
<tr>
<td>106-98-9</td>
<td>1-Butene</td>
<td>0-100</td>
</tr>
<tr>
<td>74-86-2</td>
<td>Acetylene</td>
<td>0-100</td>
</tr>
<tr>
<td>107-01-7</td>
<td>cis-2-Butene</td>
<td>0-100</td>
</tr>
<tr>
<td>115-11-7</td>
<td>Isobutylene</td>
<td>0-100</td>
</tr>
<tr>
<td>624-64-6</td>
<td>Trans-2-Butene</td>
<td>0-100</td>
</tr>
</tbody>
</table>

### Section 4 - FIRST AID MEASURES

**Inhalation**
If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

**Skin**
If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115°F; 41-46°C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.

**Eyes**
Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

**Ingestion**
If swallowed, get medical attention.

**Most Important Symptoms/Effects**

**Acute**
frostbite, suffocation. depression of central nervous system

**Delayed**
No information on significant adverse effects.

**Indication of any immediate medical attention and special treatment needed**
For inhalation, consider oxygen.

### Section 5 - FIRE FIGHTING MEASURES

**Extinguishing Media**
Suitable Extinguishing Media
carbon dioxide, regular dry chemical
Safety Data Sheet

Material Name: 1-Butene, Acetylene, cis-2-Butene, Isobutylene and Trans-2-Butene Gas Mixture

Unsuitable Extinguishing Media
Do not direct water at source of leak or safety devices; icing may occur.

Special Hazards Arising from the Chemical
Severe fire hazard. Vapors or gases may ignite at distant ignition sources and flash back. Containers may rupture or explode if exposed to heat.

Hazardous Combustion Products
oxides of carbon

Fire Fighting Measures
Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For tank, rail car or tank truck: Evacuation radius: 800 meters (1/2 mile).

Special Protective Equipment and Precautions for Firefighters
Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

Section 6 - ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures
Wear personal protective clothing and equipment, see Section 8.

Methods and Materials for Containment and Cleaning Up
Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so. Reduce vapors with water spray. Eliminate all ignition sources if safe to do so. Stop leak if safe to do so - Prevent entry into waterways, drains, or confined areas. Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering. Damaged cylinders should be handled only by specialists.

Environmental Precautions
Avoid release to the environment. Keep out of water supplies and sewers.

Section 7 - HANDLING AND STORAGE

Precautions for Safe Handling
Keep away from heat, sparks and flame. Ground any equipment used in handling. Do not breathe gas, fumes, vapor, or spray. When using, do not eat, drink or smoke. Wash hands thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves and protective clothing.

Conditions for Safe Storage, Including any Incompatibilities

Incompatible Materials
metal salts, oxidizing materials, halogens, acids, metals, metal carbide, reducing agents, halocarbons, peroxides

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Component Exposure Limits

<table>
<thead>
<tr>
<th>Component</th>
<th>Exposure Limit</th>
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</thead>
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<tr>
<td>1-Butene</td>
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Safety Data Sheet

Material Name: 1-Butene, Acetylene, cis-2-Butene, Isobutylene and Trans-2-Butene Gas Mixture

SDS ID: 00244690

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<tr>
<th>Component</th>
<th>ACGIH</th>
<th>NIOSH</th>
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<td>74-86-2</td>
<td>2500 ppm Ceiling : 2662 mg/m³ Ceiling</td>
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<tr>
<td>cis-2-Butene</td>
<td>107-01-7</td>
<td></td>
</tr>
<tr>
<td>Isobutylene</td>
<td>115-11-7</td>
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</tr>
<tr>
<td>Trans-2-Butene</td>
<td>624-64-6</td>
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</tbody>
</table>

ACGIH - Threshold Limit Values - Biological Exposure Indices (BEI)
There are no biological limit values for any of this product's components.

Engineering Controls
Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

Individual Protection Measures, such as Personal Protective Equipment

Eye/face protection
For the gas: Eye protection not required, but recommended. For the liquid: Wear splash resistant safety goggles. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Skin Protection
For the gas: Protective clothing is not required, but recommended. For the liquid: Wear appropriate protective, cold insulating clothing.

Respiratory Protection
Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use. For Unknown Concentrations or Immediately Dangerous to Life or Health - Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode. Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

Glove Recommendations
For the gas: Protective gloves are not required, but recommended. For the liquid: Wear insulated gloves.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

<table>
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<tr>
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<th>Value</th>
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<tr>
<td>Appearance</td>
<td>colorless</td>
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<tr>
<td>Physical State</td>
<td>gas</td>
</tr>
<tr>
<td>Odor</td>
<td>Not available</td>
</tr>
<tr>
<td>Color</td>
<td>colorless</td>
</tr>
</tbody>
</table>
### Section 10 - STABILITY AND REACTIVITY

**Reactivity**
No reactivity hazard is expected.

**Chemical Stability**
Stable under normal conditions of use.

**Possibility of Hazardous Reactions**
Will not polymerize.

**Conditions to Avoid**
Avoid heat, flames, sparks and other sources of ignition. Minimize contact with material. Avoid inhalation of material or combustion by-products. Keep out of water supplies and sewers.

**Incompatible Materials**
metal salts, oxidizing materials, halogens, acids, metals, metal carbide, reducing agents, halocarbons, peroxides

**Hazardous decomposition products**
oxides of carbon

### Section 11 - TOXICOLOGICAL INFORMATION

**Information on Likely Routes of Exposure**

**Inhalation**
nausea, vomiting, difficulty breathing, headache, drowsiness, dizziness, disorientation, mood swings, loss of coordination, suffocation, convulsions, unconsciousness, coma

**Skin Contact**
irritation, frostbite
Safety Data Sheet

Material Name: 1-Butene, Acetylene, cis-2-Butene, Isobutylene and Trans-2-Butene Gas Mixture

Eye Contact
irritation, frostbite

Ingestion
ingestion of a gas is unlikely

Acute and Chronic Toxicity

Component Analysis - LD50/LC50
The components of this material have been reviewed in various sources and the following selected endpoints are published:

- **cis-2-Butene (107-01-7)**
  - Inhalation LC50 Rat >10000 ppm 4 h (no deaths occurred)

- **Isobutylene (115-11-7)**
  - Inhalation LC50 Rat 620 mg/L 4 h

Product Toxicity Data

Acute Toxicity Estimate

| Inhalation - Gas | 10000.0001 ppm |

**Immediate Effects**
frostbite, suffocation, depression of central nervous system

**Delayed Effects**
No information on significant adverse effects.

**Irritation/Corrosivity Data**
No information available for the product.

**Respiratory Sensitization**
No information available for the product.

**Dermal Sensitization**
No information available for the product.

**Component Carcinogenicity**

| Isobutylene  | 115-11-7 |

ACGIH: A4 - Not Classifiable as a Human Carcinogen

**Germ Cell Mutagenicity**
No information available for the product.

**Tumorigenic Data**
No information available for the product.

**Reproductive Toxicity**
No information available for the product.

**Specific Target Organ Toxicity - Single Exposure**
central nervous system

**Specific Target Organ Toxicity - Repeated Exposure**
No target organs identified.

**Aspiration hazard**
Not applicable.

**Medical Conditions Aggravated by Exposure**
No information available for the product.

---

**Section 12 - ECOLOGICAL INFORMATION**

Component Analysis - Aquatic Toxicity
No LOLI ecotoxicity data are available for this product's components.

Persistence and Degradability
No information available for the product.

Bioaccumulative Potential
No information available for the product.

Mobility
No information available for the product.

Other Toxicity
No additional information is available.

---

**Section 13 - DISPOSAL CONSIDERATIONS**

**Disposal Methods**
Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.

**Component Waste Numbers**
The U.S. EPA has not published waste numbers for this product's components.

---

**Section 14 - TRANSPORT INFORMATION**

**US DOT Information:**
**Shipping Name:** COMPRESSED GAS, FLAMMABLE, N.O.S., (Contains: highest concentration component, second highest concentration component)

**Hazard Class:** 2.1

**UN/NA #:** UN1954

**Required Label(s):** 2.1

**IMDG Information:**
**Shipping Name:** COMPRESSED GAS, FLAMMABLE, N.O.S., (Contains: highest concentration component, second highest concentration component)

**Hazard Class:** 2.1

**UN#:** UN1954

**Required Label(s):** 2.1

**International Bulk Chemical Code**
This material does not contain any chemicals required by the IBC Code to be identified as dangerous chemicals in bulk.

---

**Section 15 - REGULATORY INFORMATION**

**U.S. Federal Regulations**
None of this product's components are listed under SARA Sections 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), or require an OSHA process safety plan.

**SARA Section 311/312 (40 CFR 370 Subparts B and C) reporting categories**
Flammable; Gas Under Pressure; Acute toxicity; Specific Target Organ Toxicity; Simple Asphyxiant

**U.S. State Regulations**
The following components appear on one or more of the following state hazardous substances lists:

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<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>CA</th>
<th>MA</th>
<th>MN</th>
<th>NJ</th>
<th>PA</th>
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<tbody>
<tr>
<td>1-Butene</td>
<td>106-98-9</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Acetylene</td>
<td>74-86-2</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
## Safety Data Sheet

### Material Name: 1-Butene, Acetylene, cis-2-Butene, Isobutylene and Trans-2-Butene Gas Mixture

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</tr>
</thead>
<tbody>
<tr>
<td>cis-2-Butene</td>
<td>107-01-7</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
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<tr>
<td>Isobutylene</td>
<td>115-11-7</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Trans-2-Butene</td>
<td>624-64-6</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
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<td>Yes</td>
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</table>

**Not listed under California Proposition 65**

**Canada Regulations**

**Canadian WHMIS Ingredient Disclosure List (IDL)**

The components of this product are either not listed on the IDL or are present below the threshold limit listed on the IDL.

**WHMIS Classification**

A, B1

**Component Analysis - Inventory**

1-Butene (106-98-9)

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**Acetylene (74-86-2)**

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**cis-2-Butene (107-01-7)**

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**Isobutylene (115-11-7)**

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Safety Data Sheet

Material Name: 1-Butene, Acetylene, cis-2-Butene, Isobutylene and Trans-2-Butene Gas Mixture

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Trans-2-Butene (624-64-6)

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</table>

**Section 16 - OTHER INFORMATION**

**NFPA Ratings**
Health: 2 Fire: 4 Reactivity: 1
Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

**Summary of Changes**
New SDS: 11/10/2015

**Key / Legend**
ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CA/MA/MN/NJ/PA - California/Massachusetts/Minnesota/New Jersey/Pennsylvania*; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CFR - Code of Federal Regulations (US); CLP - Classification, Labelling, and Packaging; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - Dangerous Substance Directive; DSL - Domestic Substances List; EC - European Commission; EEC - European Economic Community; EIN - European Inventory of (Existing Commercial Chemical Substances); EINECS - European Inventory of Existing Commercial Chemical Substances; ENCS - Japan Existing and New Chemical Substance Inventory; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; F - Background (for Venezuela Biological Exposure Indices); IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; ISHL - Japan Industrial Safety and Health Law; IUCLID - International Uniform Chemical Information Database; JP - Japan; Kow - Octanol/water partition coefficient; KR KECI Annex 1 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL); KR KECI Annex 2 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL); KR - Korea; LD50/LC50 - Lethal Dose/Lethal Concentration; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of LLists™ - ChemADVISOR’s Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; MX - Mexico; N - Non-specific; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; Nq - Non-quantitative; NSL - Non-Domestic Substance List (Canada); NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PEL - Permissible Exposure Limit; PH - Philippines; RCRA - Resource Conservation and Recovery Act; REACH-Registration, Evaluation, Authorisation, and restriction of Chemicals; RID - European Rail Transport; SARA - Superfund Amendments and Reauthorization Act; Sc - Semi-quantitative; STEL - Short-term Exposure Limit; TCCA - Korea Toxic Chemicals Control Act; TDG - Transportation of Dangerous Goods; TLV - Threshold Limit Value; TSCA - Toxic Substances Control Act; TW - Taiwan; TWA - Time Weighted Average; UEL - Upper Explosive Limit; UN/NA - United Nations /North American; US - United States; VLE - Exposure Limit Value (Mexico); VN (Draft) - Vietnam (Draft); WHMIS - Workplace Hazardous Materials Information System (Canada).
Safety Data Sheet

Material Name: 1-Butene, Acetylene, cis-2-Butene, Isobutylene and Trans-2-Butene Gas Mixture

SDS ID: 00244690

Other Information

Disclaimer:

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