



Safety Data Sheet

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

SDS ID: 00244690

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**SDS ID: 00244690**

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

CAS	Component Name	Percent
106-98-9	1-Butene	0-100
74-86-2	Acetylene	0-100
107-01-7	cis-2-Butene	0-100
115-11-7	Isobutylene	0-100
624-64-6	Trans-2-Butene	0-100

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

SDS ID: 00244690

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

Store in a well-ventilated place. Keep container tightly closed.

Store locked up.

Protect from sunlight.

Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S.

OSHA 29 CFR 1910.101. See original container for storage recommendations. Keep separated from incompatible substances.

Incompatible Materials

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

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Component Exposure Limits

1-Butene	106-98-9
-----------------	-----------------



Safety Data Sheet

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

SDS ID: 00244690

ACGIH:	250 ppm TWA
Acetylene	74-86-2
ACGIH:	(See Appendix F: Minimal Oxygen Content, explosion hazard)
NIOSH:	2500 ppm Ceiling ; 2662 mg/m3 Ceiling
cis-2-Butene	107-01-7
ACGIH:	250 ppm TWA
Isobutylene	115-11-7
ACGIH:	250 ppm TWA
Trans-2-Butene	624-64-6
ACGIH:	250 ppm TWA

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

Appearance	colorless gas	Physical State	gas
Odor	Not available	Color	colorless



Safety Data Sheet

Material Name: 1-Butene, Acetylene, cis-2-Butene, Isobutylene and Trans-2-Butene Gas Mixture**SDS ID: 00244690**

Odor Threshold	Not available	pH	Not available
Melting Point	Not available	Boiling Point	Not available
Boiling Point Range	Not available	Freezing point	Not available
Evaporation Rate	Not available	Flammability (solid, gas)	Not available
Autoignition Temperature	Not available	Flash Point	Flammable
Lower Explosive Limit	Not available	Decomposition temperature	Not available
Upper Explosive Limit	Not available	Vapor Pressure	Not available
Vapor Density (air=1)	Not available	Specific Gravity (water=1)	Not available
Water Solubility	Not available	Partition coefficient: n-octanol/water	Not available
Viscosity	Not available	Kinematic viscosity	Not available
Solubility (Other)	Not available	Density	Not available
Physical Form	Compressed gas	Molecular Weight	Not available

Other Information

No additional information is available.

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

SDS ID: 00244690

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



Safety Data Sheet

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

SDS ID: 00244690

No LOEL 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:

Component	CAS	CA	MA	MN	NJ	PA
1-Butene	106-98-9	No	Yes	No	Yes	Yes
Acetylene	74-86-2	Yes	Yes	Yes	Yes	Yes



Safety Data Sheet

Material Name: 1-Butene, Acetylene, cis-2-Butene, Isobutylene and Trans-2-Butene Gas Mixture**SDS ID: 00244690**

cis-2-Butene	107-01-7	No	No	No	Yes	Yes
Isobutylene	115-11-7	No	Yes	No	Yes	Yes
Trans-2-Butene	624-64-6	No	Yes	No	Yes	Yes

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)**

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes

Acetylene (74-86-2)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes

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

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes

Isobutylene (115-11-7)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
----	----	----	----	----	-----------	-----------	-------------------	-------------------	----------------	----	----	----	----	------------



Safety Data Sheet

Material Name: 1-Butene, Acetylene, cis-2-Butene, Isobutylene and Trans-2-Butene Gas Mixture**SDS ID: 00244690**

Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes
-----	-----	-----	-----	-----	-----	-----	-----	----	----	-----	-----	-----	-----	-----

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

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes

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 Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; MX - Mexico; Ne - 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).



MATHESON

ask . . The Gas Professionals™

Safety Data Sheet

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

SDS ID: 00244690

Other Information

Disclaimer:

Matheson Tri-Gas, Inc. makes no express or implied warranties, guarantees or representations regarding the product or the information herein, including but not limited to any implied warranty or merchantability or fitness for use. Matheson Tri-Gas, Inc. shall not be liable for any personal injury, property or other damages of any nature, whether compensatory, consequential, exemplary, or otherwise, resulting from any publication, use or reliance upon the information herein.