



Material Safety Data Sheet

1. Product and Company Identification

Product name : **Cis-2-Butene**

Chemical formula : C₄H₈

Synonyms : 2-Butene-Cis; Cis-1,2-Dimethylethylene; Cis-Butylene; 2-Butene (CIS); Sym-Dimethylethylene; Dimethylethylene; Pseudo-Butylene; Cis-Butene-2; "High-Boiling" Butene-2; (Z)-2-Butene; Cis-2-Butylene; Beta-Cis-Butylene; (2Z)-Butene; (Z)-But-2-Ene; Cis-But-2-Ene; Cis-Butene; UN 1012

Company : Specialty Gases of America, Inc
6055 Brent Dr.
Toledo, OH 43611

Telephone : 419-729-7732

Emergency : 800-424-9300

2. Composition/Information on Ingredients

Components	CAS Number	% Volume
Cis-2-Butene	590-18-1	100%

Component Related Regulatory Information

This product may be regulated, have exposure limits or other information identified as the following:
Butylene (25167-67-3).

3. Hazards Identification

Emergency Overview

Flammable gas. May cause flash fire.
May cause difficulty breathing.

Potential Health Effects

Inhalation : Irritation, nausea, vomiting, irregular heartbeat, headache, drowsiness, symptoms of drunkenness, suffocation, lung congestions. May cause liver damage in long term exposure.

Eye contact : Frostbite, blurred vision.

Skin contact : Burns, frostbite.

Ingestion : Frostbite.

Chronic Health Hazard : None known.

4. First Aid Measures

Eye contact : Contact with liquid: Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

Skin contact : 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 blanket. Get immediate medical attention.
- Ingestion : If a large amount is swallowed, get medical attention.
- Inhalation : If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.
- Note to physicians : For inhalation, consider oxygen.

5. Fire-Fighting Measures

- Suitable extinguishing media : Regular dry chemical, carbon dioxide.
Large fires: Flood with fine water spray.
- Specific hazards : Severe fire hazard. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back. Gas/air mixtures are explosive.
- Fire fighting : 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: Stop leak if possible without personal risk. Let burn unless leak can be stopped immediately. For smaller tanks or cylinders, extinguish fire and isolate from other flammables. Evacuation radius: 800 meters (1/2 mile). Do not attempt to extinguish fire unless flow of material can be stopped first. Flood with fine water spray. Cool containers with water spray until well after the fire is out. Apply water from a protected location or from a safe distance. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas. Evacuate if fire gets out of control or containers are directly exposed to fire. Evacuation radius: 500 meters (1/3 mile). Consider downward evacuation if material is leaking. Stop flow of gas.

6. Accidental Release Measures

- Occupational spill/release : Avoid heat, flames, sparks and other sources of ignition. Do not touch spilled material. Stop leak if possible without personal risk. Reduce vapors with water spray. Keep unnecessary people away, isolate hazard area and deny entry. Remove sources of ignition. Ventilate closed spaces before entering.
- Additional advice : None.

7. Handling and Storage

Handling

Secure cylinder when using to protect from falling. Use suitable hand truck to move cylinders.

Storage

Subject to storage regulations: U.S. OSHA 29 CFR 1910.110. U.S. OSHA 29 CFR 1910.101. Store in accordance with all current regulations and standards. Grounding and bonding required. Keep separated from incompatible substances.

8. Exposure Controls / Personal Protection

Exposure limits

ACGIH : 250 ppm TWA

Engineering measures/Ventilation

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

Personal protective equipment

- 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.
Any supplied-air respirator with a full facepiece that is operated in a 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.
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.
- Hand protection : Wear insulated gloves.
- Eye 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 and body protection : For the gas: Protective clothing is not required. For the liquid: Wear appropriate protective, cold insulating clothing.

9. Physical and Chemical Properties

- Form : Liquefied Gas.
Color : Colorless.
Odor : Distinct odor.
Molecular weight : 56.11
Vapor pressure : Not available.
Vapor density : 1.9 (air = 1)
Boiling point : 4°C
Melting point : -139°C
Water solubility : Insoluble.
Specific gravity : 0.6 (water = 1)
Solvent solubility : Soluble: alcohol, ether, benzene.

10. Stability and Reactivity

- Stability : Stable under normal conditions.
Conditions to avoid : Avoid heat, flames, sparks and other sources of ignition. Minimize contact with material. Containers may rupture or explode if exposed to heat.
Materials to avoid : Halogens, oxidizing materials.
Hazardous decomposition products : Thermal decomposition products: Oxides of carbon.

11. Toxicological Information

The components of this material have been reviewed in various sources and the following endpoints are published:

CIS-2-BUTENE (590-18-1) : Inhalation LC50 Rat: 658 mg/L/4H

Component Carcinogenicity

None of this product's components are listed by ACGIH, IARC, NTP, OSHA or DFG.

12. Ecological Information

No LOEL ecotoxicity data are available for this product's components.

13. Disposal Considerations

Waste from residues / unused products : Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.
Contaminated packaging : Return cylinder to supplier.

14. Transport Information

DOT (US only)

Proper shipping name : Butylene
Class : 2.1
UN/ID No. : UN1012
Labeling : Flammable Gas

15. Regulatory Information

U.S. Federal Regulations

None of this product's components are listed under SARA Section 302/304 (40 CFR 355 Appendix A), SARA Section 311/312 (40 CFR 370.21), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), or require an OSHA process safety plan.

SARA 311/312

Acute: Yes
Chronic: No
Fire: Yes
Reactive: No
Pressure: Yes

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	RI
CIS-2-BUTENE (related to: Butylene)	590-18-1	No	Yes	No	Yes	Yes	Yes

Not regulated under California Proposition 65

16. Other Information

Prepared by : Specialty Gases of America, Inc.
For additional information, please visit our website at www.americangasgroup.com.