

Section 1 – Product and Company Identification

- 1.1 GHS Product Identifier** : 2-Butene, Cis & Trans
Other means of identification : Butylene
- Product Number** : 315196
Chemical Formula : C4 H8
CAS Number : 107-01-7
EC Number : 203-452-9
- 1.2 Recommended use** : Laboratory chemicals, Manufacture of substances
- 1.3 Supplier's detail** : Wiley Companies
1245 South 6th Street
Coshocton, Ohio 43812.
(740) 622-0755.
- 1.4 Emergency Telephone number** : (800) 633-8253.
International number : (801) 629-0667.

Section 2 – Hazards Identification

- 2.1 GHS Classification of the substance or mixture**
GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Flammable gases, Category 1
Gases under pressure, Liquefied gases
Simple asphyxiant

- 2.2 GHS Label elements, including precautionary statements**
Pictogram



Signal word Danger

Hazard statement(s)

- H220 Extremely flammable gas.
H280 Contains gas under pressure; may explode if heated.

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May displace oxygen and cause rapid suffocation

Precautionary statement(s)

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P242 Use only non-sparking tools.
P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 Eliminate all ignition sources if safe to do so.
P410 + P403 Protect from sunlight. Store in a well-ventilated place.

2.3 Hazards not otherwise classified or not covered by GHS

None.

Section 3 - Composition / Information on Ingredients**Substance/Mixture**

Chemical name : 2-Butene, Cis & Trans
Synonyms : Butylene
Formula : C4 H8
CAS number : 107-01-7
EC number : 203-452-9

Hazardous components

Component	Classification	Concentration
2-Butene, Cis & Trans	Flammable Gas (Category 1) Gas under pressure Liquefied gas	>99%

Section 4 - First Aid Measures**4.1 Description of necessary first aid measures****If inhaled**

Remove person to fresh air. Consult a physician if necessary.
If breathing is stopped, administer artificial respiration if trained to do so.

In case of skin contact

Flush with copious amounts of water for at least 15 minutes. Consult a physician if necessary.

In case of eye contact

Flush with copious amounts of water for at least 15 minutes. Consult a physician if necessary.

If ingested

Rinse mouth out with water.
Never give liquid to an unconscious person.
Consult a physician if necessary.

4.2 Most important symptoms and effects, both acute and delayed

No data available.

4.3 Indication of immediate medical attention and special treatment needed, if necessary

No data available.

Section 5 – Fire Fighting Measure**5.1 Extinguishing media****Suitable extinguishing media**

Water spray,
Alcohol resistant foam,
Carbon dioxide,
Dry chemical.

Unsuitable extinguishing media

None.

5.2 Specific hazards arising from the chemical

Carbon oxides.

5.3 Special protective equipment for fire fighters

Cool vessels and containers with sprayed water.
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH for firefighters (approved or equivalent) and full protective gear.

5.4 Special precautions for fire fighters

Containers may explode when heated.
Vapours can accumulate in low areas.
Evacuate all personnel from the danger area.
Remove ignition sources if safe to do so.

Vapors can be ignited by pilot lights, other flames, smoking, sparks, heaters, electrical equipment, static discharge, or other ignition sources at locations distant from product release point.

Section 6 – Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures.

Use personal protective equipment.

Wear self-contained breathing apparatus when entering area unless atmosphere is proven to be safe.

Avoid breathing vapours, mist or gas.

Prevent further leakage or spillage if safe to do so.

Ensure adequate ventilation, especially in confined areas.

Remove all sources of ignition.

Evacuate personnel to safe areas.

Prevent contamination of soil, drains and surface water

Take up residue with absorbent material and dispose of in accordance with all local, state and federal regulations.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so.

Prevent entry into waterways, sewers, basements or confined areas.

6.3 Methods and materials for containment and cleaning up

Utilize non-sparking tools.

Section 7 – Handling and Storage

7.1 Precautions for safe handling

Avoid vapour inhalation

Do not eat, drink or smoke when using this product.

Keep away from source of ignition.

Use only non-sparking tools.

Use only explosion-proof equipment.

Take measures to prevent buildup of electrostatic charge.

7.2 Conditions for safe storage, including any incompatibilities

Store material in D.O.T. approved containers.

Follow all applicable local, state, and federal regulations.

Section 8 – Exposure Controls / Personal Protection

8.1 Control parameters**Occupational exposure limits**

Ingredient name	Exposure limits
2-Butene, Cis & Trans	ACGIH, TWA: 250 ppm

8.2 Appropriate engineering controls

Engineering Controls:

Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA PELs.

8.3 Individual protection measures**Administrative Controls:**

Handle in accordance with good industrial hygiene and safety practice.

When workplace conditions warrant respirator use, follow a respiratory protection program that meets OSHA 29 CFR 1910.134, ANSI Z88.2, or MSHA 30 CFR 72.710 (where applicable). Use an air-supplied or air-purifying cartridge if the action level is exceeded.

Ensure that the respirator has the appropriate protection factor for the exposure level. If cartridge type respirators are used, the cartridge must be appropriate for the chemical exposure (e.g., an organic vapor cartridge). For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus (SCBA).

Wear protective eyeglasses or chemical safety goggles, per OSHA eye and face protection regulations (29 CFR 1910.133).

Wear face shield and safety glasses as approved under appropriate government standards (NIOSH or EN 166).

Wear chemically protective gloves.

Wear impervious, flame retardant protective clothing.

Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

Section 9 – Physical and Chemical Properties**9.1 Information on basic physical and chemical properties**

Appearance : Colorless, liquefied gas.

Odour : No data available.

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Odour Threshold	: No data available.
pH	: No data available.
Melting point/freezing point	: - 140 ° C (- 220 ° F) – lit.
Initial boiling point and boiling point range	: 1°- 3.7° C (34°- 40° F) – lit.
Flash point	: -11° C (10.4° F) closed cup
Evaporation rate	: No data available.
Flammability (solid, gas)	: No data available.
Upper/lower flammability Or explosive limits	: 1.7 % to 9.3 % (V).
Vapour pressure	: 1600 mmHg at 25 ° C (77 ° F).
Vapour density	: 1.94 (Air=1.0)
Relative density	: 0.59 – 0.62 g/cm ³ .
Water solubility	: 0.222 g/l at 25 ° C (77 ° F) – soluble.
Partition coefficient: n-octanol/water	: log Pow: 2.31 – 2.33
Auto-ignition Temperature	: 324 – 345 ° C (615 – 653 ° F).
Decomposition Temperature	: No data available.
Viscosity	: No data available.
Molecular weight	: 56.11 g/mol

Section 10 – Stability and Reactivity**10.1 Reactivity**

No data available.

10.2 Chemical stability

This material is stable at room temperature in closed containers under normal storage and handling conditions.

10.3 Possibility of hazardous reactions

No data available.

10.4 Conditions to avoid

Heat, flames and other sources of ignition.

10.5 Incompatible materials

Strong oxidizing agents.

10.6 Hazardous decomposition products

Thermal oxidative decomposition of this material can produce carbon oxides

Section 11 – Toxicological Information**11.1 Information on toxicological effects****Acute toxicity**

No data available

Skin corrosion/irritation

No data available.

Serious eye damage/eye irritation

No data available.

Respiratory or skin sensitization

No data available.

Germ cell mutagenicity

No data available.

Carcinogenicity

IARC : No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH : No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP : No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

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OSHA : No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity

No data available.

Specific target organ toxicity – single exposure

No data available.

Specific target organ toxicity – repeated exposure

No data available.

Aspiration hazard

No data available.

Information on the likely routes of exposure

Inhalation, skin contact.

Symptoms related to the physical, chemical and toxicological characteristics

No data available.

Delayed and immediate effects and also chronic effects from short and long-term exposure

Mild to moderate exposures include headache, nausea, compensatory increase of respiration and pulse.

Severe exposure symptoms include decreased alertness, fatigue, euphoria, memory loss, loss of consciousness, seizures, and death.

Numeric measures of toxicity

No data available.

Section 12 – Ecological Information**12.1 Toxicity**

No data available.

12.2 Persistence and degradability

No data available.

No ecological damage caused by this product.

12.3 Bioaccumulative potential

No data available.

No ecological damage caused by this product.

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12.4 Mobility in soil

No data available.

12.5 Other adverse effects

No data available.

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Section 13 – Disposal Considerations
13.1 Disposal Methods

Follow all applicable local, state, and federal regulations.

Dispose of contents/container in accordance with local/regional/national/international regulations.

Section 14 – Transport Information

	DOT	IMDG	IATA
UN number	1012	1012	1012
Un proper shipping name	Butylene	BUTYLENE	Butylene
Transport hazard class	2.1	2.1	2.1
Packing group	None	None	None
Marine pollutant	No	No	-

Section 15 – Regulatory Information
SARA 302 Components

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards

Fire hazard, Sudden release.

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Section 16 – Other Information

	HMIS		NFPA
Health - Chronic			
Health Hazard	0	Health Hazard	1
Flammability	4	Fire Hazard	4
Physical	3	Reactivity	0

Prepared By:

 Wiley Companies
 The EH&S Department

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