

SAFETY DATA SHEETS

According to the UN GHS revision 9

Version: 1.2
Creation Date: July 15, 2019
Revision Date: August 08, 2025

SECTION 1: Identification

1.1 GHS Product identifier

Product name 1,3-Butadiene

1.2 Other means of identification

Product number LCHM700778-ME
Other names -

1.3 Recommended use of the chemical and restrictions on use

Identified uses For laboratory and Industrial use only.
Uses advised against no data available

1.4 Supplier's details

Company CATO Research Chemicals Inc.
Address 3/F,Building B,No.179 BASIGO, Guangpu Rd East,Huangpu Dist,Guangzhou
Telephone +86-20-81960175

1.5 Emergency phone number

Emergency phone number +86-20-81960175
Service hours 'Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT +8 hours).

SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

Gases under pressure: Compressed gas
Flammable gases, Category 1A, Flammable gas
Germ cell mutagenicity, Category 1B
Carcinogenicity, Category 1A

2.2 GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

Hazard statement(s)

H220 Extremely flammable gas
H340 May cause genetic defects
H350 May cause cancer

Precautionary statement(s)

Prevention

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P203 Obtain, read and follow all safety instructions before use.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...

Response

P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 In case of leakage, eliminate all ignition sources.
P318 IF exposed or concerned, get medical advice.

Storage

P410+P403 Protect from sunlight. Store in a well-ventilated place.
P403 Store in a well-ventilated place.
P405 Store locked up.

Disposal

P501 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.

2.3 Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
1,3-Butadiene	Buta-1,3-diene	106-99-0	203-450-8	100%

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

If inhaled

Fresh air, rest. Refer for medical attention.

Following skin contact

ON FROSTBITE: rinse with plenty of water, do NOT remove clothes. Refer for medical attention .

Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

Following ingestion

Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a doctor or Poison Control Center immediately.

4.2 Most important symptoms/effects, acute and delayed

Slight anesthetic effect at high concentrations; causes ``frostbite" from skin contact; slight irritation to eyes and nose at high concentrations. (USCG, 1999)

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

no data available

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media

Excerpt from ERG Guide 116P [Gases - Flammable (Unstable)]: DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED. SMALL FIRE: Dry chemical or CO2. LARGE FIRE: Water spray or fog. Move containers from fire area if you can do it without risk. FIRE INVOLVING TANKS: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. Do not direct water at source of leak or safety devices; icing may occur. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. (ERG, 2016)

5.2 Specific hazards arising from the chemical

Behavior in Fire: Vapors heavier than air and may travel a considerable distance to a source of ignition and flashback. Containers may explode in a fire due to polymerization. (USCG, 1999)

5.3 Special protective actions for fire-fighters

Shut off supply; if not possible and no risk to surroundings, let the fire burn itself out. In other cases extinguish with water spray, powder, carbon dioxide, foam. In case of fire: keep cylinder cool by spraying with water.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Remove all ignition sources. Evacuate danger area! Consult an expert! Personal protection: self-contained breathing apparatus. Shut off cylinder if possible. Isolate the area until the gas has dispersed. NEVER direct water jet on liquid.

6.2 Environmental precautions

Remove all ignition sources. Evacuate danger area! Consult an expert! Personal protection: chemical protection suit including self-contained breathing apparatus. Ventilation. NEVER direct water jet on liquid.

6.3 Methods and materials for containment and cleaning up

Collect and arrange disposal. Keep the chemical in suitable and closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

NO open flames, NO sparks and NO smoking. Closed system, ventilation, explosion-proof electrical equipment and lighting. Prevent build-up of electrostatic charges (e.g., by grounding) if in liquid state. Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

7.2 Conditions for safe storage, including any incompatibilities

Fireproof. Cool. Separated from food and feedstuffs.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

TLV: 2 ppm as TWA; A2 (suspected human carcinogen). EU-OEL: 2.2 mg/m³, 1 ppm as TWA. MAK: carcinogen category: 1; germ cell mutagen group: 2

Biological limit values

no data available

8.2 Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

8.3 Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Wear face shield.

Skin protection

Cold-insulating gloves.

Respiratory protection

Use closed system and ventilation.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state	Butadiene is a colorless gas with an aromatic odor. It is shipped as a liquefied gas under its vapor pressure. Contact with the liquid can cause frostbite. It is easily ignited. Its vapors are heavier than air and a flame can flash back to the source of leak very easily. It can asphyxiate by the displacement of air. It must be shipped inhibited as butadiene is liable to polymerization. If polymerization occurs in the container, it may violently rupture. Under prolonged exposure to fire or intense heat the containers may rupture violently and rocket. It is used to make synthetic rubber and plastics, and to make other chemicals.
Colour	no data available
Odour	no data available
Melting point/freezing point	176°C(lit.)
Boiling point or initial boiling point and boiling range	?4.5°C(lit.)
Flammability	Flammable Gas
Lower and upper explosion limit/flammability limit	no data available
Flash point	-75°C
Auto-ignition temperature	788°F
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	no data available
Solubility	Insoluble (NTP, 1992)
Partition coefficient n-octanol/water	1.99
Vapour pressure	1863 mm Hg (21 °C)
Density and/or relative density	0.62g/mL at 20°C(lit.)
Relative vapour density	1.9 (15 °C, vs air)
Particle characteristics	no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

The substance can form peroxides on exposure to air, initiating explosive polymerization. The substance may polymerize due to warming. This generates fire or explosion hazard. Mixtures with copper and its alloys are shock-sensitive. See Notes. Decomposes explosively on rapid heating under pressure. Reacts vigorously with oxidants and many other substances. This generates fire and explosion hazard.

10.2 Chemical stability

no data available

10.3 Possibility of hazardous reactions

The gas is heavier than air and may travel along the ground; distant ignition possible. As a result of flow, agitation, etc., electrostatic charges can be generated. Vapours are uninhibited and may polymerize, causing blockage of vents. A colorless gas, it can react with oxidizing reagents. Upon long exposure to air it forms explosive peroxides. They are sensitive to heat or shock; sudden polymerization may occur [Scott, D. A., Chem. Eng. News, 1940, 18, p.404]. Butadiene polyperoxides are insoluble in liquefied butadiene (m. p. -113° C, b. p. -2.6° C) and progressively separate leading to local concentration build up. Self-heating from a spontaneous decomposition will lead to explosion [Hendry, D. G. et al., Ind. Eng. Chem., 1968, 7, p. 136, 1145]. Explodes on contact with aluminum tetrahydroborate, potentially explosive reaction with chlorine dioxide (peroxide) and crotonaldehyde (above 180° C). Reaction with sodium nitrite forms a spontaneously flammable product [Sax, 9th ed., 1996, p. 539].

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

AIR AND WATER REACTIONS: In contact with air, butadiene may form violently explosive peroxides, which can be exploded by mild heat or shock. Solid butadiene absorbs enough oxygen at subatmospheric pressures to make it explode violently when heated just above its melting point (Ind. Eng. Chem. 51:733 1959). **CHEMICAL PROFILE:** A colorless gas, it can react with oxidizing reagents. Upon long exposure to air it forms explosive peroxides. They are sensitive to heat or shock; sudden polymerization may occur [Scott, D. A., Chem. Eng. News, 1940, 18, p.404]. Butadiene polyperoxides are insoluble in liquified butadiene (m. p. -113 C, b. p. -2.6 C) and progressively separate leading to local concentration build up. Self-heating from a spontaneous decomposition will lead to explosion [Hendry, D. G. et al., Ind. Eng. Chem., 1968, 7, p. 136, 1145]. Explodes on contact with aluminum tetrahydroborate, potentially explosive reaction with chlorine dioxide (peroxide) and crotonaldehyde (above 180 C). Reaction with sodium nitrite forms a spontaneously flammable product [Sax, 9th ed., 1996, p. 539]. (REACTIVITY, 1999)

10.6 Hazardous decomposition products

When heated to decomposition it emits acrid smoke and irritating fumes.

SECTION 11: Toxicological information

Acute toxicity

- Oral: no data available
- Inhalation: no data available
- Dermal: no data available

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

NTP: Known to be a human carcinogen

Reproductive toxicity

No information is available on reproductive or developmental effects of 1,3-butadiene in humans. Animal studies using mice have reported developmental effects, such as skeletal abnormalities and decreased fetal weights, and reproductive effects, including an increased incidence of ovarian atrophy and testicular atrophy from inhalation exposure to 1,3-butadiene.

STOT-single exposure

The substance at very high concentrations is irritating to the eyes and respiratory tract. Rapid evaporation of the liquid may cause frostbite. Inhalation of high concentrations may cause depression of the central nervous system.

STOT-repeated exposure

The substance may have effects on the bone marrow. This substance is carcinogenic to humans. May cause heritable genetic damage to human germ cells.

Aspiration hazard

A harmful concentration of this gas in the air will be reached very quickly on loss of containment.

SECTION 12: Ecological information

12.1 Toxicity

- Toxicity to fish: no data available
- Toxicity to daphnia and other aquatic invertebrates: no data available
- Toxicity to algae: no data available

- Toxicity to microorganisms: no data available

12.2 Persistence and degradability

no data available

12.3 Bioaccumulative potential

no data available

12.4 Mobility in soil

no data available

12.5 Other adverse effects

no data available

SECTION 13: Disposal considerations

13.1 Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

14.1 UN Number

ADR/RID: UN1010 (For reference only, please check.) IMDG: UN1010 (For reference only, please check.) IATA: UN1010 (For reference only, please check.)

14.2 UN Proper Shipping Name

ADR/RID: BUTADIENES, STABILIZED or BUTADIENES AND HYDROCARBON MIXTURE, STABILIZED, containing more than 40% butadienes (For reference only, please check.) IMDG: BUTADIENES, STABILIZED or BUTADIENES AND HYDROCARBON MIXTURE, STABILIZED, containing more than 40% butadienes (For reference only, please check.) IATA: BUTADIENES, STABILIZED or BUTADIENES AND HYDROCARBON MIXTURE, STABILIZED, containing more than 40% butadienes (For reference only, please check.)

14.3 Transport hazard class(es)

ADR/RID: 2.1 (For reference only, please check.) IMDG: 2.1 (For reference only, please check.) IATA: 2.1 (For reference only, please check.)

14.4 Packing group, if applicable

ADR/RID: (For reference only, please check.) IMDG: (For reference only, please check.) IATA: (For reference only, please check.)

14.5 Environmental hazards

ADR/RID: No IMDG: No IATA: No

14.6 Special precautions for user

no data available

14.7 Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

Chemical name	Common names and synonyms	CAS number	EC number
Buta-1,3-diene	Buta-1,3-diene	106-99-0	203-450-8
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
EC Inventory			Listed.
United States Toxic Substances Control Act (TSCA) Inventory			Listed.
China Catalog of Hazardous chemicals 2015			Listed.
New Zealand Inventory of Chemicals (NZIoC)			Listed.

Philippines Inventory of Chemicals and Chemical Substances (PICCS)	Listed.
Vietnam National Chemical Inventory	Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)	Listed.
Korea Existing Chemicals List (KECL)	Listed.

SECTION 16: Other information

Information on revision

Creation Date	July 15, 2019
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Abbreviations and acronyms

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

References

- IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>
- HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>
- IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>
- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
- CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>
- ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>
- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: <http://www.phmsa.dot.gov/hazmat/library/erg>
- Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>
- ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

Other Information

The odour warning when the exposure limit value is exceeded is insufficient. Turn leaking cylinder with the leak up to prevent escape of gas in liquid state.

Any questions regarding this SDS, Please send your inquiry to info@cato-chem.com

Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. We as supplier shall not be held liable for any damage resulting from handling or from contact with the above product.