

SAFETY DATA SHEET




Revision date: 2023-03-30

Version: BUT000(20).2

1. IDENTIFICATION

- A. Product name : 1,3-Butadiene
- B. Recommended use and restriction on use
- General use : Raw material of tire, paint, wrapper and latex
 - Restriction on use : Not Available
- C. Manufacturer / Supplier / Distributor information
- Manufacturer information
- Company name
SK Geocentric Co.,Ltd.
 - Address
Office) 51, Jong-ro, Jongno-gu, Seoul, Korea
Plant) 2, Sinyecheon-ro, Nam-gu, Ulsan, Korea
R&D) 325, Exporo, Yuseong-gu, Daejeon, Korea
 - Dept.
Safety Health Environment Team
 - Telephone number : Plant) 82-52-208-2114
 - Emergency telephone number
Plant) 82-52-208-2114
 - Fax number :
 - E-mail address :
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2. HAZARD IDENTIFICATION

- A. GHS Classification
- Flammable gases : Category1
 - Gases under pressure : Compressed gas
 - Germ cell mutagenicity : Category1B
 - Carcinogenicity : Category1A
- B. GHS label elements
- Hazard symbols
- 


- Signal words
- Danger
- Hazard statements

- H220 Extremely flammable gas
- H350 May cause cancer
- H340 May cause genetic defects
- H280 Compressed gas ; Contains gas under pressure; may explode if heated

○ Precautionary statements

1) Prevention

- P201 Obtain special instructions before use.
- P202 Do not handle until all safety precautions have been read and understood.
- P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.

2) Response

- P308+P313 If exposed or concerned: Get medical advice/attention.
- P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
- P381 Eliminate all ignition sources if safe to do so.

3) Storage

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

4) Disposal

- P501 Dispose of contents/container in accordance with local/regional/national/international regulation

C. Other hazards which do not result in classification : (NFPA Classification)

○ NFPA grade (0 ~ 4 level)

- Health : 2, Flammability : 4, Reactivity : 2

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Trade names and Synonyms	CAS No.	%[weight]
1,3-Butadiene	Butadiene ; Butadiene monomer ; Alpha-butadiene ; Alpha, gamma-butadiene ; Buta-1,3-diene ; Methylallene ; 1-Methylallene ; Vinylethylene ; Divinyl ; 2-Butene-1,4-diyl	106-99-0	99.5
(Z)-2-Butene	cis-2-butene	590-18-1	0.5

4. FIRST AID MEASURES

A. Eye contact

- Do not rub your eyes.
- Immediately flush eyes with plenty of water for at least 15 minutes and call a doctor/physician.
- Get medical attention immediately.

B. Skin contact

- Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- Wash contaminated clothing thoroughly before re-using.
- Wear gloves when washing the patient, and please avoid contact with contaminated clothing.
- Get medical attention immediately.
- Remove contaminated clothing, shoes and isolate.

C. Inhalation contact

- When exposed to large amounts of steam and mist, move to fresh air.
- Take specific treatment if needed.
- If breathing is stopped or irregular, give artificial respiration and supply oxygen.
- Get medical attention immediately.

D. Ingestion contact

- Please be advised by doctor whether induction of vomit is demanded or not.
- Rinse your mouth with water immediately.
- Get medical attention immediately.

E. Delayed and immediate effects and also chronic effects from short and long term exposure

- Not available

F. Notes to physician

- Notify medical personnel of contaminated situations and have them take appropriate protective measures.
- If exposed or concerned, get medical attention/advice.

5. FIREFIGHTING MEASURES

A. Suitable (Unsuitable) extinguishing media

- Dry chemical, carbon dioxide, regular foam extinguishing agent, spray
- Avoid use of water jet for extinguishing

B. Specific hazards arising from the chemical

- high-pressure gas; May explode when heated.

C. Special protective actions for firefighters

- Cool containers with water until well after fire is out.
- Keep unauthorized personnel out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- Use appropriate extinguishing measure suitable for surrounding fire.
- Keep containers cool with water spray.
- Leaking gas fire: do not extinguish, unless leak can be stopped safely.
- Remove sources of ignition.

6. ACCIDENTAL RELEASE MEASURES

A. Personal precautions, protective equipment and emergency procedures

- Do not touch spilled material. Stop leak if you can do it without risk.
- Move container to safe area from the leak area.
- Remove all sources of ignition.
- Cleanup and disposal under expert supervision is advised.
- Keep unauthorized people away, isolate hazard area and deny entry.

B. Environmental precautions

- Prevent runoff and contact with waterways, drains or sewers.
- If large amounts have been spilled, inform the relevant authorities.

C. Methods and materials for containment and cleaning up

- Large spill : Stay upwind and keep out of low areas. Dike for later disposal.
- Notification to central government, local government. When emissions at least of the standard amount
- Dispose of waste in accordance with local regulation.
- Appropriate container for disposal of spilled material collected.
- Spilled material should be treated as a potential risk of waste collected.

7. HANDLING AND STORAGE

A. Precautions for safe handling

- Get the manual before use.
- Refer to Engineering controls and personal protective equipment.
- Dealing only with a well-ventilated place.
- Operators should wear antistatic footwear and clothing.
- Contaminated work clothing should not be allowed out of the workplace.
- Handling only authorized person.
- Contaminated work clothing should not be allowed out of the workplace.
- Avoid contact with heat, sparks, flame or other ignition sources.

B. Conditions for safe storage, including any incompatibilities

- Check regularly for leaks.
- Do not use damaged containers.
- Avoid direct sunlight.
- Keep sealed when not in use.
- Prevent static electricity and keep away from combustible materials or heat sources.
- Store in well ventilated area.
- By specifying a storage area for carcinogenic substances.
- Collected them in sealed containers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

A. Exposure limits

○ ACGIH TLV

- [1,3-Butadiene] : TWA, 2 ppm (4.4 mg/m³)
- [(Z)-2-Butene] : TWA, 250 ppm (574 mg/m³)

○ OSHA PEL

- [1,3-Butadiene]:1 ppm / 5 ppm STEL

B. Engineering controls

- Business owner is recommended to maintain below recommended exposure limits for the working place with general exhaust of gas/vapour/mist/fume.

C. Individual protection measures, such as personal protective equipment

○ Respiratory protection

- Respiratory protection is ranked in order from minimum to maximum.
- Consider warning properties before use.
- Any chemical cartridge respirator with organic vapor cartridge(s).
- Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s).
- Any air-purifying respirator with a full facepiece and an organic vapor canister.
- For Unknown Concentration or Immediately Dangerous to Life or Health : Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply. Any self-contained breathing apparatus with a full facepiece.
- Under conditions of frequent use or heavy exposure, Respiratory protection may be needed.

○ Eye protection

- Wear primary eye protection such as splash resistant safety goggles with a secondary protection face shield.
- Provide an emergency eye wash station and quick drench shower in the immediate work area.

○ Hand protection

- Wear appropriate chemical resistant glove.

○ Skin protection

- Wear appropriate chemical resistant protective clothing.

○ Others

- Not available

9. PHYSICAL AND CHEMICAL PROPERTIES

A. Appearance

- Appearance : Gas
- Color : Colorless

B. Odor

: A peculiar smell

C. Odor threshold

: Not available

D. pH

: Not available

E. Melting point/Freezing point

: -109°C

F. Initial Boiling Point/Boiling Ranges

: -4 °C

G. Flash point

: -76 °C

H. Evaporation rate

: Not available

I. Flammability(solid, gas)

: Not available

J. Upper/Lower Flammability or explosive limits

: 16.3 / 1.1 %

K. Vapour pressure

: 2110 mmHg (25°C)

L. Solubility

: 0.0735 g/100mℓ (20°C)

M. Vapour density

: 1.9 (Air=1)

N. Specific gravity(Relative density)

: 0.6 (Water=1)

O. Partition coefficient of n-octanol/water

: 1.99

P. Autoignition temperature

: 414 °C

Q. Decomposition temperature

: Not available

R. Viscosity

: 0.00754 cP

S. Molecular weight

: 54.09

10. STABILITY AND REACTIVITY

A. Chemical Stability

- May form explosive mixture.
- high-pressure gas; May explode when heated.

B. Possibility of hazardous reactions

- Cylinders exposed to fire may vent and release flammable gas.
- Contact with other combustible material may cause fire.

C. Conditions to avoid

- Avoid contact with incompatible materials and condition.
- Avoid : Accumulation of electrostatic charges, Heating, Flames and hot surfaces
- Avoid contact with heat, sparks, flame or other ignition sources.

D. Incompatible materials

- Not available

E. Hazardous decomposition products

- May emit flammable vapour if involved in fire.

11. TOXICOLOGICAL INFORMATION

A. Information on the likely routes of exposure

☐ (Respiratory tracts)

- Not available

☐ (Oral)

- Not available

☐ (Eye · Skin)

- Not available

B. Delayed and immediate effects and also chronic effects from short and long term exposure

☐ Acute toxicity

* Oral

- Not available

* Dermal

- Not available

* Inhalation

- Product (ATEmix) : >50000ppm

- [1,3-Butadiene] : Gas LC50 128827 ppm (285 mg/L) Rat (NIER)

☐ Skin corrosion/irritation

- Not available

☐ Serious eye damage/irritation

- Not available

☐ Respiratory sensitization

- Not available

☐ Skin sensitization

- Not available

☐ Carcinogenicity

* IARC

- Not available

* OSHA

- [1,3-Butadiene] : Applicable

* ACGIH

- [(Z)-2-Butene] : A4

* NTP

- Not available

* EU CLP

- [1,3-Butadiene] : 1A (1,3-butadiene)

☐ Germ cell mutagenicity

- May cause genetic defects

☐ Reproductive toxicity

- Not available

☐ STOT-single exposure

- Not available

☐ STOT-repeated exposure

- Not available

☐ Aspiration hazard

- Not available

12. ECOLOGICAL INFORMATION

A. Ecotoxicity

☐ Fish

- Not available

- ☐ Crustaceans
 - Not available

- ☐ Algae
 - Not available

B. Persistence and degradability

- ☐ Persistence
 - [1,3-Butadiene] : log Kow 1.99 (ECHA)
 - [(Z)-2-Butene] : log Kow 2.33 (ICSC)

- ☐ Degradability
 - Not available

C. Bioaccumulative potential

- ☐ Bioaccumulative potential
 - [(Z)-2-Butene] : BCF 11.99 (Estimate)

- ☐ Biodegradation
 - Not available

D. Mobility in soil

- Not available

E. Other adverse effects

- Not available

13. DISPOSAL CONSIDERATIONS

A. Disposal methods

- Since more than two kinds of designaed waste is mixed, it is difficult to treat seperatly, then can be reduction or stabilization by incineration or similar process.
- If water separation is possible, pre-process with Water separation process.
- Dispose by incineration.

B. Special precautions for disposal

- The user of this product must dispose by oneself or entrust it to a waste disposer, a person who recycles other's waste or establishes and operates waste disposal facilities.
- Dispose of waste in accordance with all applicable laws and regulations.

14. TRANSPORT INFORMATION

A. UN No. (IMDG CODE/IATA DGR)

- 1010

B. Proper shipping name

- BUTYLENE SEE ALSO PETROLEUM GASES, LIQUEFIED

C. Hazard Class

- 2.1

D. IMDG CODE/IATA DGR Packing group

- Not Available

E. Marine pollutant

- Not applicable

F. Special precautions for user related to transport or transportation measures

- Local transport follows in accordance with Dangerous goods Safety Management Law.
- Package and transport follow in accordance with Department of Transportation (DOT) and other regulatory agency requirements.
- EmS FIRE SCHEDULE : F-D (Flammable gases)
- EmS SPILLAGE SCHEDULE : S-U (Gases (flammable, toxic or corrosive))

15. REGULATORY INFORMATION

A. National and/or international regulatory information

☐ POPs Management Law

- Not applicable

☐ Information of EU Classification

*** Classification**

- [1,3-Butadiene] : H220, H350, H340
- [(Z)-2-Butene] : H220

- ☐ U.S. Federal regulations
 - * OSHA PROCESS SAFETY (29CFR1910.119)
 - Not applicable
 - * CERCLA Section 103 (40CFR302.4)
 - [1,3-Butadiene] : 4.53599 kg 10 lb
 - * EPCRA Section 302 (40CFR355.30)
 - Not applicable
 - * EPCRA Section 304 (40CFR355.40)
 - Not applicable
 - * EPCRA Section 313 (40CFR372.65)
 - [1,3-Butadiene] : Applicable
- ☐ Rotterdam Convention listed ingredients
 - Not applicable
- ☐ Stockholm Convention listed ingredients
 - Not applicable
- ☐ Montreal Protocol listed ingredients
 - Not applicable

16. OTHER INFORMATION

A. Reference

- The information contained herein is believed to be accurate. It is provided independently of any sale of the product for purpose of hazard communication. It is not intended to constitute performance information concerning the product. No express warranty, or implied warranty of merchantability or fitness for a particular purpose is made with respect to the product or the information contained herein.
- This Safety Data Sheet was compiled with data and information from the following sources: KOSHA, NITE, ESIS, NLM, SIDS, IPCS

B. Issue date

2015-06-11

C. Revision number and Last date revised

Revision number : 2

Last date revised : 2023-03-30

D. Other

- This SDS is prepared according to the Globally Harmonized System (GHS).