ChemicalBook

Chemical Safety Data Sheet MSDS / SDS

1,2-Dibromoethane

Revision Date:2024-08-24 Revision Number:1

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product identifier

Product name	: 1,2-Dibromoethane
CBnumber	: CB6852689
CAS	: 106-93-4
EINECS Number	: 203-444-5
Synonyms	: 1，2-dibromoethane,ethylene dibromide

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	: For R&D use only. Not for medicinal, household or other use.
Uses advised against	: none

Company Identification

Company	: Chemicalbook
Address	: Building 1, Huihuang International, Shangdi 10th Street, Haidian District, Beijing
Telephone	: 400-158-6606

SECTION 2: Hazards identification

Classification of the substance or mixture

Acute toxicity - Category 3, Oral

Acute toxicity - Category 3, Dermal

Skin irritation, Category 2

Eye irritation, Category 2

Acute toxicity - Category 3, Inhalation

Specific target organ toxicity – single exposure, Category 3

Carcinogenicity, Category 1B

Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 2

Label elements

Pictogram(s)

Signal word Danger

Hazard statement(s)

H225 Highly Flammable liquid and vapour

H301 Toxic if swalloed

H311 Toxic in contact with skin

H315 Causes skin irritation

H319 Causes serious eye irritation

H331 Toxic if inhaled

H335 May cause respiratory irritation

H350 May cause cancer

H370 Causes damage to organs

H411 Toxic to aquatic life with long lasting effects

Precautionary statement(s)

P201 Obtain special instructions before use.

P210 Keep away from heat/sparks/open flames/hot surfaces. — No smoking.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P273 Avoid release to the environment.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P311 Call a POISON CENTER or doctor/physician.

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continuerinsing.

P405 Store locked up.

Prevention

P264 Wash ... thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P271 Use only outdoors or in a well-ventilated area.

P203 Obtain, read and follow all safety instructions before use.

P273 Avoid release to the environment.

Response

P301+P316 IF SWALLOWED: Get emergency medical help immediately.

P321 Specific treatment (see ... on this label).

P330 Rinse mouth.

P302+P352 IF ON SKIN: Wash with plenty of water/...

P316 Get emergency medical help immediately.

P361+P364 Take off immediately all contaminated clothing and wash it before reuse.

P332+P317 If skin irritation occurs: Get medical help.

P362+P364 Take off contaminated clothing and wash it before reuse.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P319 Get medical help if you feel unwell.

P318 IF exposed or concerned, get medical advice.

P391 Collect spillage.

Storage

P405 Store locked up.

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

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.

Other hazards

no data available

SECTION 3: Composition/information on ingredients

Substance

Product name	: 1,2-Dibromoethane
Synonyms	: 1，2-dibromoethane,ethylene dibromide
CAS	: 106-93-4
EC number	: 203-444-5
MF	: C2H4Br2
MW	: 187.86

SECTION 4: First aid measures

Description of first aid measures

If inhaled

Fresh air, rest. Half-upright position. Refer immediately for medical attention.

Following skin contact

Remove contaminated clothes. Rinse and then wash skin with water and soap. 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. Do NOT induce vomiting. Give one or two glasses of water to drink. Refer for medical attention .

Most important symptoms and effects, both acute and delayed

Local inflammation, blisters and ulcers on skin; irritation in lungs and organic injury to liver and kidneys; may be absorbed through skin. (USCG, 1999)

Indication of any immediate medical attention and special treatment needed

Rinse eyes with water. Wash polluted portions with soap and water.

SECTION 5: Firefighting measures

Extinguishing media

Use water spray or foam for fighting fires where ethylene dibromide is stored. Use water to keep fire-exposed containers cool.

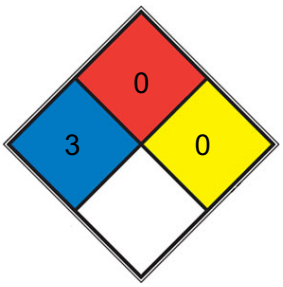
Specific Hazards Arising from the Chemical

Special Hazards of Combustion Products: Decomposition gases are toxic and irritating. Behavior in Fire: Decomposes into toxic irritating gases. Reacts with hot metals such as aluminum and magnesium. (USCG, 1999)

Advice for firefighters

In case of fire in the surroundings, use appropriate extinguishing media.

NFPA 704



■	HEALTH	3	Short exposure could cause serious temporary or moderate residual injury (e.g. liquid hydrogen, sulfuric acid, calcium hypochlorite, hexafluorosilicic acid)
■	FIRE	0	Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand. Materials that will not burn in air when exposed to a temperature of 820 °C (1,500 °F) for a period of 5 minutes.(e.g. Carbon tetrachloride)
■	REACT	0	Normally stable, even under fire exposure conditions, and is not reactive with water (e.g. helium,N2)
□	SPEC. HAZ.		

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Ventilation. Do NOT let this chemical enter the environment. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

Environmental precautions

Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Ventilation. Do NOT let this chemical enter the environment. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

Methods and materials for containment and cleaning up

1. ventilate area of spill or leak. 2. if in liq form, collect for reclamation or absorb in vermiculite, dry sand, earth, or similar material. 3. if in solid form, collect ... in most convenient & safe manner for reclamation.

SECTION 7: Handling and storage

Precautions for safe handling

NO contact with incompatible materials: See Chemical Dangers 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.

Conditions for safe storage, including any incompatibilities

Separated from strong oxidants, strong bases, powdered metals and food and feedstuffs. See Chemical Dangers. Ventilation along the floor. Store in an area without drain or sewer access.Store in a cool, dry, dark, well-ventilated location. Separate from oxidizing materials, alkali metal, ammonia.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

TLV: (skin); A3 (confirmed animal carcinogen with unknown relevance to humans).MAK: skin absorption (H); carcinogen category: 2

Biological limit values

no data available

Exposure controls

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

Individual protection measures

Eye/face protection

Wear safety goggles, face shield or eye protection in combination with breathing protection.

Skin protection

Protective gloves. Protective clothing.

Respiratory protection

Use ventilation, local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties

Information on basic physicochemical properties

Physical state	Liquid
Colour	Clear colorless to pale yellow
Odour	Chloroform odor

Melting point/freezing point	9.9 °C.
Boiling point or initial boiling point and boiling range	131 - 132 °C.
Flammability	Noncombustible Liquid
Lower and upper explosion limit/flammability limit	no data available
Flash point	103°C(lit.)
Auto-ignition temperature	Not flammable (USCG, 1999)
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	dynamic viscosity (in mPa s) = 1.595. Temperature:25.0°C.;dynamic viscosity (in mPa s) = 1.116. Temperature:50.0°C.;dynamic viscosity (in mPa s) = 837. Temperature:75.0°C.
Solubility	water: soluble250 part
Partition coefficient n-octanol/water	log Pow = 2.011. Remarks:Predicted using Epiwin (KOWWIN, V1.67).
Vapour pressure	11.7 mm Hg (25 °C)
Density and/or relative density	2.17 g/mL.;6.5.
Relative vapour density	~6.5 (vs air)
Particle characteristics	no data available

SECTION 10: Stability and reactivity

Reactivity

NIOSH has recommended that ethylene dibromide be treated as a potential human carcinogen.
Decomposes on heating or on burning and on contact with hot surfaces. This produces toxic and corrosive fumes of hydrogen bromide and bromine (see ICSC 0107). Reacts violently with powdered aluminium, powdered magnesium, calcium, strong bases and strong oxidants. This generates fire and explosion hazard. Attacks some forms of plastic, rubber and coatings.

Chemical stability

1,2-Dibromomethane/ is stable and nonflammable.

Possibility of hazardous reactions

Not flammableETHYLENE DIBROMIDE slowly decomposes in the presence of light and heat. Turns brown upon exposure to light. Corrosive to iron and other metals. May decompose upon contact with alkalis. Incompatible with oxidizing agents. Reacts with sodium, potassium, calcium, powdered aluminum, zinc, magnesium and liquid ammonia. May attack some plastics, rubber and coatings. May poison platinum catalysts [Hawley]. Reacts as an alkylating agent (NTP, 1992).

Conditions to avoid

no data available

Incompatible materials

Incompatible with calcium, liquid ammonia, zinc, sodium, potassium, and strong oxidizers.

Hazardous decomposition products

At 240-270 deg C in a glass vessel, ethylene bromide decomposes into vinyl bromide & hydrogen bromide.

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 Rat oral 108 mg/kg
- Inhalation: LC50 Rat inhalation 14,300 mg/cu m/30 min
- 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: Reasonably anticipated to be a human carcinogen, EPA: Probable human carcinogen, IARC: Probably carcinogenic to humans

Reproductive toxicity

no data available

STOT-single exposure

The substance is irritating to the eyes, skin and respiratory tract. The substance may cause effects on the liver and kidneys. This may result in tissue lesions. Exposure at high concentrations could cause lowering of consciousness and death. The effects may be delayed.

STOT-repeated exposure

Repeated or prolonged contact with skin may cause dermatitis. The substance may have effects on the liver and kidneys, resulting in impaired functions. This substance is probably carcinogenic to humans. Animal tests show that this substance possibly causes toxicity to human reproduction or development.

Aspiration hazard

A harmful contamination of the air can be reached very quickly on evaporation of this substance at 20°C.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: LC50 - Oncorhynchus mykiss (previous name: Salmo gairdneri) - 1.13 mg/L - 96 h.

Toxicity to daphnia and other aquatic invertebrates: EC50 - Daphnia magna - 11.61 mg/L - 48 h.

Toxicity to algae: EC50 - Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum) - > 4.48 mg/L - 72 h.

Toxicity to microorganisms: EC50 - activated sludge of a predominantly domestic sewage - > 1 000 mg/L - 3 h. Remarks:Respiration rate.

Persistence and degradability

Ethylene dibromide degraded readily in primary sewage sludge suspensions under both aerobic and anaerobic conditions(1); under aerobic conditions, degradation occurred within days, while under anaerobic conditions, degradation took 5-6 weeks(1). In three day die-away tests using Japanese river and seawater, ethylene dibromide was observed to have moderate degradation (21-35% degradation)(2). Low concs of ethylene dibromide (<100 ug/l) were biotransformed completely within 2 weeks by a reductive dehalogenation under methanogenic conditions in a continuous-flow column(3); sterile controls showed that some abiotic degradation was also occurring, but microbial degradation was dominant(3). In a microcosm study simulating methanogenic conditions found in aquifer material, ethylene dibromide was found to biodegrade relatively rapidly(4); after 16 weeks of incubation, greater than 99% of initial ethylene dibromide was transformed(4); in sterile controls, only 20% was transformed after 40 weeks(4).

Bioaccumulative potential

A BCF for ethylene dibromide has been measured to be < 1(1). Orange red killifish exposed to an aqueous solution containing ethylene dibromide at 15 and 150 ug/l had a BCF ranging from <3.5-14.9 and 1.6-3.2, respectively(2). According to a classification scheme(3), these BCF values suggest the potential for bioconcentration in aquatic organisms is low(SRC).

Mobility in soil

Ethylene dibromide exhibits slow to moderate adsorption to soil with measured Koc values ranging from 14 to 160(1). According to a classification scheme(2), these Koc values suggest that ethylene dibromide is expected to have high to very high mobility in soil.

Other adverse effects

no data available

SECTION 13: Disposal considerations

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

UN Number

ADR/RID: UN1605 (For reference only, please check.)

IMDG: UN1605 (For reference only, please check.)

IATA: UN1605 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: ETHYLENE DIBROMIDE (For reference only, please check.)

IMDG: ETHYLENE DIBROMIDE (For reference only, please check.)

IATA: ETHYLENE DIBROMIDE (For reference only, please check.)

Transport hazard class(es)

ADR/RID: 6.1 (For reference only, please check.)

IMDG: 6.1 (For reference only, please check.)

IATA: 6.1 (For reference only, please check.)

Packing group, if applicable

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

IMDG: I (For reference only, please check.)

IATA: I (For reference only, please check.)

Environmental hazards

ADR/RID: Yes

IMDG: Yes

IATA: Yes

Special precautions for user

no data available

Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

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

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.

PICCS

Listed.

Vietnam National Chemical Inventory

Listed.

IECSC

Listed.

Korea Existing Chemicals List (KECL)

Listed.

SECTION 16: Other information

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

Depending on the degree of exposure, periodic medical examination is suggested.