

## Chemical Safety Data Sheet MSDS / SDS

## Butyl vinyl ether SDS

Revision Date:2024-04-25 Revision Number:1

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

Product name: Butyl vinyl ether

CAS: 111-34-2

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

Relevant identified uses: For R&amp;D use only. Not for medicinal, household or other use.

Uses advised against: none

**Company Identification**

Company: Chemicalbook.in

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**SECTION 2: Hazards identification****Classification of the substance or mixture**

Flammable liquids, Category 2

Skin irritation, Category 2

Skin sensitization, Sub-category 1B

### GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

### Hazard statement(s)

H225 Highly flammable liquid and vapour

H315 Causes skin irritation

H317 May cause an allergic skin reaction

### Precautionary statement(s)

### Prevention

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P233 Keep container tightly closed.

P240 Ground and bond container and receiving equipment.

P241 Use explosion-proof [electrical/ventilating/lighting/...] equipment.

P242 Use non-sparking tools.

P243 Take action to prevent static discharges.

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

P264 Wash ... thoroughly after handling.

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

P272 Contaminated work clothing should not be allowed out of the workplace.

### Response

P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse affected areas with water [or shower].

P370+P378 In case of fire: Use ... to extinguish.

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

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

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

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

P333+P317 If skin irritation or rash occurs: Get medical help.

### Storage

P403+P235 Store in a well-ventilated place. Keep cool.

## 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 which do not result in classification

no data available

## SECTION 3: Composition/information on ingredients

### Substance

Chemical name: Butyl vinyl ether

Common names and synonyms: Butyl vinyl ether

CAS number: 111-34-2

EC number: 203-860-7

Concentration: 100%

## SECTION 4: First aid measures

### Description of necessary first-aid measures

#### If inhaled

Move the victim into fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and consult a doctor immediately. Do not use mouth to mouth resuscitation if the victim ingested or inhaled the chemical.

#### Following skin contact

Take off contaminated clothing immediately. Wash off with soap and plenty of water. Consult a doctor.

#### Following eye contact

Rinse with pure water for at least 15 minutes. Consult a doctor.

#### 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.

#### **Most important symptoms/effects, acute and delayed**

Excerpt from ERG Guide 127P [Flammable Liquids (Water-Miscible)]: Inhalation or contact with material may irritate or burn skin and eyes. Fire may produce irritating, corrosive and/or toxic gases. Vapors may cause dizziness or suffocation. Runoff from fire control may cause pollution. (ERG, 2016)

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

Basic treatment: Establish a patent airway. Suction if necessary. Watch for signs of respiratory insufficiency and assist ventilations if necessary. Administer oxygen by nonrebreather mask at 10 to 15 L/min. Provide a low-stimulus environment. Monitor for shock and treat if necessary. Anticipate seizures and treat if necessary. For eye contamination, flush eyes immediately with water. Irrigate each eye continuously with normal saline during transport. Do not use emetics. For ingestion, rinse mouth and administer 5 mL/kg up to 200 mL of water for dilution if the patient can swallow, has a strong gag reflex, and does not drool. Treat frostbite by rapid rewarming. Ethers and related compounds

### **SECTION 5: Firefighting measures**

#### **Suitable extinguishing media**

Water may be ineffective ... alcohol foam is recommended. From table

#### **Specific hazards arising from the chemical**

Excerpt from ERG Guide 127P [Flammable Liquids (Water-Miscible)]: HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks). Vapor explosion hazard indoors, outdoors or in sewers. Those substances designated with a (P) may polymerize explosively when heated or involved in a fire. Runoff to sewer may create fire or explosion hazard. Containers may explode when heated. Many liquids are lighter than water. (ERG, 2016)

#### **Special protective actions for fire-fighters**

Wear self-contained breathing apparatus for firefighting if necessary.

### **SECTION 6: Accidental release measures**

### Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Avoid breathing mist, gas or vapours. Avoid contacting with skin and eye. Use personal protective equipment. Wear chemical impermeable gloves. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

### Environmental precautions

Prevent further spillage or leakage if it is safe to do so. Do not let the chemical enter drains. Discharge into the environment must be avoided.

### 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

### Precautions for safe handling

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

Store the container tightly closed in a dry, cool and well-ventilated place. Store apart from foodstuff containers or incompatible materials.

## SECTION 8: Exposure controls/personal protection

### Control parameters

### Occupational Exposure limit values

Component	Butyl vinyl ether			
CAS No.	111-34-2			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>
Latvia	?	20	?	?

**Biological limit values**

no data available

**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.

**Individual protection measures, such as personal protective equipment (PPE)****Eye/face protection**

Wear tightly fitting safety goggles with side-shields conforming to EN 166(EU) or NIOSH (US).

**Skin protection**

Wear fire/flame resistant and impervious clothing. Handle with gloves. Gloves must be inspected prior to use. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

**Respiratory protection**

If the exposure limits are exceeded, irritation or other symptoms are experienced, use a full-face respirator.

**Thermal hazards**

no data available

**SECTION 9: Physical and chemical properties and safety characteristics**

Physical state:	Liquid. Liquid.
Colour:	Clear, colourless.
Odour:	no data available
Melting point/freezing point:	-91.4 °C. Remarks:CV ±0.1 °C.

Boiling point or initial boiling point and boiling range:	94.49 °C. Atm. press.:1 013.25 hPa. Remarks:Extrapolated value from vapour pressure curve using the Antoine equation.
Flammability:	no data available
Lower and upper explosion limit/flammability limit:	no data available
Flash point:	-6 °C. Atm. press.:1 013.25 hPa.
Auto-ignition temperature:	190 °C. Atm. press.:1 013.25 hPa.
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	dynamic viscosity (in mPa s) = 0.44. Temperature:20°C. Remarks:Calculated with a density of the test item of $\rho = 0.7789 \text{ g/cm}^3$ .;kinematic viscosity (in mm <sup>2</sup> /s) = 0.57. Temperature:20°C.;dynamic viscosity (in mPa s) = 0.34. Temperature:40°C. Remarks:Calculated with a density of the test item of $\rho = 0.7588 \text{ g/cm}^3$ .
Solubility:	Insoluble in water
Partition coefficient n-octanol/water:	Pow = 1 426. Temperature:20 °C. Remarks:SD: 293; mean of six replicates.;log Pow = 3.15. Temperature:20 °C. Remarks:SD: 0.09, mean of six replicates.
Vapour pressure:	53.65 hPa. Temperature:20 °C. Remarks:Interpolated value from vapour pressure curve using the Antoine equation.;69.24 hPa. Temperature:25 °C. Remarks:Interpolated value from vapour pressure curve using the Antoine equation.;214.23 hPa. Temperature:50 °C. Remarks:Interpolated value from vapour pressure curve using the Antoine equation.
Density and/or relative density:	0.789. Temperature:20 °C.
Relative vapour density:	3.5 (vs air)
Particle characteristics:	no data available

## SECTION 10: Stability and reactivity

### Reactivity

Highly flammable. Slightly soluble in water. Ethers tend to form unstable peroxides when exposed to oxygen. Ethyl, isobutyl, ethyl tert-butyl, and ethyl tert-pentyl ether are particularly hazardous in this respect. Ether peroxides can sometimes be observed as clear crystals deposited on containers or along the surface of the liquid.

### Chemical stability

no data available

### Possibility of hazardous reactions

Flammable, dangerous fire risk. Ethers, such as BUTYL VINYL ETHER can act as bases. They form salts with strong acids and addition complexes with Lewis acids. The complex between diethyl ether and boron trifluoride is an example. Ethers may react violently with strong oxidizing agents. In other reactions, which typically involve the breaking of the carbon-oxygen bond, ethers are relatively inert.

### Conditions to avoid

no data available

### Incompatible materials

Can react with oxidizing materials.

### Hazardous decomposition products

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

## SECTION 11: Toxicological information

### Acute toxicity

Oral: LD50 - rat (male) - 10 300 mg/kg bw. Remarks: Limits of  $\pm 1.96$  standard deviations (calculated according to Thompson): 8400-12630 mg/kg bw.

Inhalation: LC50 - rat (male/female) - > 33.3 mg/L air.

Dermal: LD50 - rabbit (male) - 3 300 mg/kg bw.



**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**

no data available

**Reproductive toxicity**

no data available

**STOT-single exposure**

no data available

**STOT-repeated exposure**

no data available

**Aspiration hazard**

no data available

**SECTION 12: Ecological information**

**Toxicity**

Toxicity to fish: LC50 - Danio rerio (previous name: Brachydanio rerio) - > 1 000 mg/L - 96 h.

Toxicity to daphnia and other aquatic invertebrates: EC50 - Daphnia magna - > 100 mg/L - 48 h.

Toxicity to algae: EC50 - Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum) - 19.8 mg/L - 72 h.

Toxicity to microorganisms: EC10 - Pseudomonas putida - > 8 000 mg/L - 16 h.

#### **Persistence and degradability**

no data available

#### **Bioaccumulative potential**

An estimated BCF of 7 was calculated for butyl vinyl ether(SRC), using a water solubility of 3,000 mg/l(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low.

#### **Mobility in soil**

The Koc of butyl vinyl ether is estimated as approximately 53(SRC), using a water solubility of 3,000 mg/l(1) and a regression-derived equation(2,SRC). According to a classification scheme(3), this estimated Koc value suggests that butyl vinyl ether is expected to have very high mobility in soil(SRC).

#### **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: UN2352 (For reference only, please check.)

IMDG: UN2352 (For reference only, please check.)

IATA: UN2352 (For reference only, please check.)

### UN Proper Shipping Name

ADR/RID: BUTYL VINYL ETHER, STABILIZED (For reference only, please check.)

IMDG: BUTYL VINYL ETHER, STABILIZED (For reference only, please check.)

IATA: BUTYL VINYL ETHER, STABILIZED (For reference only, please check.)

### Transport hazard class(es)

ADR/RID: 3 (For reference only, please check.)

IMDG: 3 (For reference only, please check.)

IATA: 3 (For reference only, please check.)

### Packing group, if applicable

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

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

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

### Environmental hazards

ADR/RID: No

IMDG: No

IATA: No

### 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](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/>

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