SAFETY DATA SHEETS

According to the UN GHS revision 8

Version: 1.0
Creation Date: July 15, 2019
Revision Date: July 15, 2019

1. SECTION 1: Identification

1.1. GHS Product identifier

Product name 2-butoxyethanol

1.2. Other means of identification

Product number -

Other names 2-Butoxyethanol; Ethanol, 2-butoxy-; Ethylene Glycol Mono-Butyl Ether

1.3. Recommended use of the chemical and restrictions on use

Identified uses Food additives -> Flavoring Agents

Uses advised against no data available

1.4. Supplier's details

Company Shandong Sincere Chemical Co., Ltd.

Address No.21 Industrial North Road, Licheng District, Jinan City,Shandong Province, China.

Telephone (+86) 188-6575-9396.

1.5. Emergency phone number

Emergency phone number (+86) 188-6575-9396.

Service hours Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT +8 hours).

2. SECTION 2: Hazard identification

2.1. Classification of the substance or mixture

Acute toxicity - Category 4, Oral
Acute toxicity - Category 4, Dermal
Skin irritation, Category 2
Eye irritation, Category 2
Acute toxicity - Category 4, Inhalation

2.2. GHS label elements, including precautionary statements

Pictogram(s)

Signal word Warning

Hazard statement(s) H302 Harmful if swallowedH312 Harmful in contact with skinH315 Causes skin irritationH319 Causes serious eye irritationH332 Harmful if

	inhaled
Precautionary statement(s)	
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.
Response	P301+P317 IF SWALLOWED: Get medical help.P330 Rinse mouth.P302+P352 IF ON SKIN: Wash with plenty of water/...P317 Get medical help.P321 Specific treatment (see ... on this label).P362+P364 Take off contaminated clothing and wash it before reuse.P332+P317 If skin irritation occurs: Get medical help.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.
Storage	none
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

3. SECTION 3: Composition/information on ingredients

3.1. Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
2-butoxyethanol	2-butoxyethanol	111-76-2	203-905-0	99%

4. SECTION 4: First-aid measures

4.1. Description of necessary first-aid measures

Medical attention is required. Consult a doctor. Show this safety data sheet (SDS) to the doctor in attendance.

If inhaled

Fresh air, rest. Refer for medical attention.

Following skin contact
Remove contaminated clothes. Rinse skin with plenty of water or shower. 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. Give one or two glasses of water to drink. Refer for medical attention .

4.2. Most important symptoms/effects, acute and delayed
Vapors irritate eyes and nose. Ingestion or skin contact causes headache, nausea, vomiting, dizziness. (USCG, 1999)

4.3. Indication of immediate medical attention and special treatment needed, if necessary
Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand-valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR as necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. Ethylene glycol, glycols, and related compounds

5. SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media
Carbon dioxide or dry chemical for small fires; alcohol-type foam for large fires.

5.2. Specific hazards arising from the chemical
Excerpt from ERG Guide 128 [Flammable Liquids (Water-Immiscible)]: 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. Substance may be transported hot. For hybrid vehicles, ERG Guide 147 (lithium ion batteries) or ERG Guide 138 (sodium batteries) should also be consulted. If molten aluminum is involved, refer to ERG Guide 169. (ERG, 2016)

5.3. Special protective actions for fire-fighters
Use water spray, powder, alcohol-resistant foam, carbon dioxide. In case of fire: keep drums, etc., cool by spraying with water.

6. SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Remove all ignition sources. Collect leaking and spilled liquid in sealable containers as far as possible. Wash away remainder with plenty of water.

6.2. Environmental precautions

Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Remove all ignition sources. Collect leaking and spilled liquid in sealable containers as far as possible. Wash away remainder with plenty of water.

6.3. Methods and materials for containment and cleaning up

Ventilate area of spill or leak. For small quantities, absorb on paper towels. Evaporate in safe place (such as fume hood). Allow sufficient time for evaporating vapors to completely clear hood ductwork. Burn paper in suitable location away from combustible materials. Large quantities can be collected and atomized in suitable combustion chamber. Waste disposal: By absorbing it in vermiculite, dry sand, earth or similar material and disposing in secured sanitary landfill; By atomizing in suitable combustion chamber.

7. SECTION 7: Handling and storage

7.1. Precautions for safe handling

NO open flames. Above 60°C use a closed system and ventilation.
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

Separated from strong oxidants and food and feedstuffs. Cool. Keep in the dark.Separated from strong oxidants, food and feedstuffs. Cool. Keep in the dark

8. SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational Exposure limit values

TLV: 20 ppm as TWA; A3 (confirmed animal carcinogen with unknown relevance to humans); BEI issued.EU-OEL: 98 mg/m3, 20 ppm as TWA; 246 mg/m3, 50 ppm as STEL; (skin).MAK: 49 mg/m3, 10 ppm; peak limitation category: I(2); skin absorption (H); carcinogen category: 4; pregnancy risk group: C

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 safety goggles 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

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

Physical state	Liquid.
Colour	Colourless.
Odour	Mild, ether-like odor
Melting point/freezing point	-74.8 °C. Atm. press.:1 atm.
Boiling point or initial boiling point and boiling range	> 171 - < 171.5 °C. Atm. press.:1 atm. Remarks:Represents the 10-95% recovery range.;173.5 °C. Atm. press.:1 atm. Remarks:Final boiling point.
Flammability	Class IIIA Combustible Liquid: Fl.P. at or above 140°F and below 200°F.
Lower and upper explosion limit/flammability limit	Lower flammable limit: 1.1% by volume @ 93 deg C; Upper flammable limit:12.7% by volume @ 135 deg C
Flash point	67 °C. Atm. press.:1 013 hPa.
Auto-ignition temperature	230 °C. Atm. press.:1 atm.
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	kinematic viscosity (in mm²/s) = 6.746. Temperature:0.0°C.;kinematic viscosity (in mm²/s) = 4.89. Temperature:10.0°C.;kinematic viscosity (in mm²/s) = 3.642. Temperature:20°C.
Solubility	Miscible with water
Partition coefficient n-octanol/water	log Pow = 0.81. Temperature:25 °C.
Vapour pressure	0.8 hPa. Temperature:20 °C.
Density and/or relative density	900 kg/m³. Temperature:20 °C.
Relative vapour density	4.1 (vs air)
Particle characteristics	no data available

10. SECTION 10: Stability and reactivity

10.1. Reactivity

The substance can form explosive peroxides. Reacts with strong oxidants. This generates fire and explosion hazard.

10.2. Chemical stability

no data available

10.3. Possibility of hazardous reactions

Combustible liquid when exposed to hear or flame.ETHYLENE GLYCOL N-BUTYL ETHER may react with bases, aluminum and oxidizing materials. It is liable to form peroxides on exposure to air and light. It attacks some forms of plastics, rubber and coatings. (NTP, 1992).

10.4. Conditions to avoid

no data available

10.5. Incompatible materials

Forms explosive mixture with air. ... Violent reaction with strong caustics adn strong oxidizers. Attacks some coatings, plastics and rubber. Attacks metallic aluminum at high temperatures.

10.6. Hazardous decomposition products

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

11. SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 - guinea pig (male/female) - 1 414 mg/kg bw.
- Inhalation: LC50 - rat (female) - 450 ppm.
- Dermal: LD0 - guinea pig (male/female) - > 2 000 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

WEIGHT-OF-EVIDENCE CHARACTERIZATION: No reliable human epidemiological studies are available that address the potential carcinogenicity of EGBE. ... NTP /the National Toxicology Program/ reported no evidence of carcinogenic activity in male F344/N rats, and equivocal evidence of carcinogenic activity in female F344/N rats on the basis of increased combined incidences of benign and malignant pheochromocytoma (mainly benign) of the adrenal medulla. They also reported some evidence of carcinogenic activity in male B6C3F1 mice on the basis of increased incidences of hemangiosarcoma of the liver, and some evidence of carcinoma (mainly papilloma). ... because of the uncertain relevance of

these tumor increases to humans, the fact that EGBE is generally negative in genotoxic tests and the lack of human data to support the findings in rodents, the human carcinogenic potential of EGBE, in accordance with the recently proposed Guidelines for Carcinogen Risk Assessment, cannot be determined at this time, but suggestive evidence exists from rodent studies. Under existing EPA guidelines, EGBE is judged to be a possible human carcinogen, Group C. There are currently no human epidemiological studies addressing the potential carcinogenicity of EGBE.

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 central nervous system, blood, kidneys and liver.

STOT-repeated exposure

The substance defats the skin, which may cause dryness or cracking.

Aspiration hazard

A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C.

12. SECTION 12: Ecological information

12.1. Toxicity

- Toxicity to fish: LC50 - Oncorhynchus mykiss (previous name: Salmo gairdneri) - 1 474 mg/L - 96 h.
- Toxicity to daphnia and other aquatic invertebrates: EC50 - Daphnia magna - 1 550 mg/L - 48 h.
- Toxicity to algae: EC50 - Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum) - 911 mg/L - 72 h.
- Toxicity to microorganisms: Toxicity threshold (TT) or EC3 - Pseudomonas putida - 700 mg/L - 16 h.

12.2. Persistence and degradability

AEROBIC: A number of aerobic biological screening studies, which utilized settled waste water, sewage, or activated sludge for inocula, indicate that ethylene glycol mono-n-butyl ether should biodegrade rapidly in the environment(1-4). Five and ten-day Theoretical BOD values were 73% (with acclimation)(1) and 74%(2). The maximum Theoretical BOD reported was 88% for 20 days(2).

12.3. Bioaccumulative potential

An estimated BCF of 3 was calculated for ethylene glycol mono-n-butyl ether(SRC), using an estimated log Kow of 0.83(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 (SRC).

12.4. Mobility in soil

The Koc of ethylene glycol mono-n-butyl ether is estimated as 8(SRC), using a log Kow of 0.83(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that ethylene glycol mono-n-butyl ether is expected to have high mobility in soil.

12.5. Other adverse effects

no data available

13. 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.

14. SECTION 14: Transport information

14.1. UN Number

ADR/RID: UN2810 (For reference only, please check.)	IMDG: UN2810 (For reference only, please check.)	IATA: UN2810 (For reference only, please check.)

14.2. UN Proper Shipping Name

ADR/RID: TOXIC LIQUID, ORGANIC, N.O.S. (For reference only, please check.)	IMDG: TOXIC LIQUID, ORGANIC, N.O.S. (For reference only, please check.)	IATA: TOXIC LIQUID, ORGANIC, N.O.S. (For reference only, please check.)

14.3. 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.)

14.4. 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.)

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

15. 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	
2-butoxyethanol	2-butoxyethanol	111-76-2	203-905-0	
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.

16. SECTION 16: Other information

Information on revision

Creation Date July 15, 2019

Revision Date July 15, 2019

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

Check for peroxides prior to distillation; eliminate if found.
