

SAFETY DATA SHEETS

According to the UN GHS revision 9

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

SECTION 1: Identification

1.1 GHS Product identifier

Product name Allyl 2,3-epoxypropyl ether

1.2 Other means of identification

Product number

-

Other names

3-allyloxy-1,2-epoxypropane; Allylglycide ether;
allyloxymethyloxirane

1.3 Recommended use of the chemical and restrictions on use

Identified uses

Industrial and scientific research use.

Uses advised against

no data available

1.4 Supplier's details

Company

Shanghai Baishun Biotechnology Co., Ltd

Address

No. 26, Lane 918, Lianye Road, Zhelin Town, Fengxian
District, Shanghai, 201400, China

Telephone

+86-21-37581181

1.5 Emergency phone number

**Emergency phone
number**

+86-21-37581181

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

Flammable liquids, Category 3

Acute toxicity - Category 4, Oral

Skin irritation, Category 2

Serious eye damage, Category 1

Skin sensitization, Category 1

Acute toxicity - Category 4, Inhalation

Specific target organ toxicity – single exposure, Category 3

Germ cell mutagenicity, Category 2

Carcinogenicity, Category 2

Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 3

Reproductive toxicity, Category 2

2.2 GHS label elements, including precautionary statements

Pictogram(s)



Signal word	Danger
Hazard statement(s)	H226 Flammable liquid and vapour H302 Harmful if swallowed H315 Causes skin irritation H318 Causes serious eye damage H317 May cause an allergic skin reaction H332 Harmful if inhaled H335 May cause respiratory irritation H341 Suspected of causing genetic defects H351 Suspected of causing cancer H412 Harmful to aquatic life with long lasting effects
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. P270 Do not eat, drink or smoke when using this product. P261 Avoid breathing dust/fume/gas/mist/vapours/spray. P272 Contaminated work clothing should not be allowed out of the workplace. 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	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. P301+P317 IF SWALLOWED: Get medical help. P330 Rinse mouth. 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. P305+P354+P338 IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P317 Get medical help. P333+P317 If skin irritation or rash occurs: Get medical help. 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.
Storage	P403+P235 Store in a well-ventilated place. Keep cool. P403+P233 Store in a well-ventilated place. Keep container tightly closed. 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
Allyl 2,3-epoxypropyl ether	Allyl 2,3-epoxypropyl ether	106-92-3	203-442-4	100%

SECTION 4: First-aid measures**4.1 Description of necessary first-aid measures****If inhaled**

Fresh air, rest. Artificial respiration may be needed. Refer 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. Give one or two glasses of water to drink. Refer for medical attention .

4.2 Most important symptoms/effects, acute and delayed

Excerpt from ERG Guide 129 [Flammable Liquids (Water-Miscible / Noxious)]: May cause toxic effects if inhaled or absorbed through skin. Inhalation or contact with material may irritate or burn skin and eyes. Fire will produce irritating, corrosive and/or toxic gases. Vapors may cause dizziness or suffocation. Runoff from fire control or dilution water may cause pollution. (ERG, 2016)

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 129 [Flammable Liquids (Water-Miscible / Noxious)]: CAUTION: All these products have a very low flash point: Use of water spray when fighting fire may be inefficient. SMALL FIRE: Dry chemical, CO₂, water spray or alcohol-resistant foam. Do not use dry chemical extinguishers to control fires involving nitromethane (UN1261) or nitroethane (UN2842). LARGE FIRE: Water spray, fog or alcohol-resistant foam. Do not use straight streams. Move containers from fire area if you can do it without risk. FIRE INVOLVING TANKS OR CAR/TRAILER LOADS: 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. 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

Excerpt from ERG Guide 129 [Flammable Liquids (Water-Miscible / Noxious)]: 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)

5.3 Special protective actions for fire-fighters

Use powder, foam, carbon dioxide, water. In case of fire: keep drums, etc., cool by spraying with water.

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. Ventilation. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in inert absorbent. Wash away remainder with plenty of water. Store and dispose of according to local regulations. Do NOT let this chemical enter the environment.

6.2 Environmental precautions

Personal protection: self-contained breathing apparatus. Ventilation. 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

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. Above 48°C use a closed system, ventilation and explosion-proof electrical equipment. 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. Separated from strong oxidants, strong bases and strong acids. Cool. Keep in the dark.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

TLV: 1 ppm as TWA; A4 (not classifiable as a human carcinogen). MAK: carcinogen category: 2; skin absorption (H); sensitization of skin (SH)

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, 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

SECTION 9: Physical and chemical properties and safety characteristics

Physical state	Liquid.
Colour	Colorless.
Odour	CHARACTERISTIC, NOT UNPLEASANT ODOR
Melting point/freezing point	-100 °C.
Boiling point or initial boiling point and boiling range	153.9 °C. Atm. press.:1 023.25 hPa.
Flammability	Class II Combustible Liquid: Fl.P. at or above 100°F and below 140°F.
Lower and upper explosion limit/flammability limit	no data available
Flash point	45 °C. Atm. press.:1 013.25 hPa.
Auto-ignition temperature	264 °C. Atm. press.:763 mm Hg. Remarks:22 °C / 48 % humidity.
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	dynamic viscosity (in mPa s) = 1.2. Temperature:20°C.
Solubility	greater than or equal to 100 mg/mL at 65.3° F (NTP, 1992)
Partition coefficient n-octanol/water	log Pow = 0.45. Temperature:25 °C.
Vapour pressure	4.8 mBar. Temperature:20 °C.;7.7 mBar. Temperature:30 °C.;20 mBar. Temperature:50 °C.
Density and/or relative density	0.97 g/cm³. Temperature:20 °C.
Relative vapour density	3.9 (vs air)
Particle characteristics	no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

The substance can presumably form explosive peroxides. The substance may readily polymerize. Decomposes on burning. This produces toxic gases. Reacts violently with strong oxidants, acids and bases.

10.2 Chemical stability

no data available

10.3 Possibility of hazardous reactions

ALLYL GLYCIDYL ETHER reacts violently with oxidizing agents. Can form peroxides. Polymerizes readily [Handling Chemicals Safely 1980. p.128].

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Strong oxidizers.

10.6 Hazardous decomposition products

no data available

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 - rat (male) - 1 600 mg/kg bw.
- Inhalation: LC50 - rat (male) - ca. 1.46 mg/L air.
- Dermal: LD50 - rabbit (male) - 2 550 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

A4; Not classifiable as a human carcinogen.

Reproductive toxicity

no data available

STOT-single exposure

Corrosive. The substance is corrosive to the eyes, skin and respiratory tract. Inhalation of the vapour may cause lung oedema. See Notes. Exposure could cause central nervous system depression. Exposure could cause lowering of consciousness. Medical observation is indicated.

STOT-repeated exposure

Repeated or prolonged contact with skin may cause dermatitis. Repeated or prolonged contact may cause skin sensitization. May cause genetic damage in humans. Animal tests show that this substance possibly causes toxicity to human reproduction or development. This substance is possibly carcinogenic to humans.

Aspiration hazard

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

SECTION 12: Ecological information

12.1 Toxicity

- Toxicity to fish: LC50 - Cyprinus carpio - 36 mg/L - 96 h.
- Toxicity to daphnia and other aquatic invertebrates: EC50 - Daphnia magna - 50 mg/L - 48 h.

- Toxicity to algae: EC50 - Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum) - > 79 mg/L - 72 h.
 - Toxicity to microorganisms: EC0 - activated sludge, domestic - 1.5 mg/L - 28 d.
- Remarks: Respiration rate.

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: UN2219 (For reference only, please check.)

IMDG: UN2219 (For reference only, please check.)

IATA: UN2219 (For reference only, please check.)

14.2 UN Proper Shipping Name

ADR/RID: ALLYL GLYCIDYL ETHER (For reference only, please check.)

IMDG: ALLYL GLYCIDYL ETHER (For reference only, please check.)

IATA: ALLYL GLYCIDYL ETHER (For reference only, please check.)

14.3 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.)

14.4 Packing group, if applicable

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

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

IATA: III (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

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
Allyl 2,3-epoxypropyl ether	Allyl 2,3-epoxypropyl ether	106-92-3	203-442-4
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

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

Explosive limits are unknown in literature, although the substance is combustible and has a flash point < 61°C. Use of alcoholic beverages enhances the harmful effect. Depending on

the degree of exposure, periodic medical examination is suggested. The symptoms of lung oedema often do not become manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation are therefore essential. The odour warning when the exposure limit value is exceeded is insufficient. Check for peroxides prior to distillation; eliminate if found.

Any questions regarding this SDS, Please send your inquiry to sds@xixisys.com

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