Chemical Safety Data Sheet

Section 1 IDENTIFICATION

GHS Product identifier: Tetrahydrofuran.
Other means of identification: 1,4-Epoxybutane; Butylene oxide; Cyclotetramethylene oxide.
Recommended use of the chemical and restrictions on use: This product can be used as a solvent, raw material for organic synthesis, etc.
Supplier's details:
Emergency phone number:

Section 2 HAZARDS IDENTIFICATION

Classification of the substance or mixture:
Flammable liquids Category 2
Serious eye damage/eye irritation Category 2A
Carcinogenicity Category 2
Specific target organ toxicity, single exposure Category 3 (respiratory tract irritation)
GHS Label elements, including precautionary statements:
Symbol:

Signal word: Danger
Hazard statement(s): Highly flammable liquid and vapor. Causes serious eye irritation. Suspected of causing cancer. May cause respiratory irritation.
Precautionary statement(s):
Prevention:
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed. Ground/Bond container and receiving equipment. Use explosion-proof [electrical/ventilating/lighting/...] equipment. Use only non-sparking tools. Take action to prevent static discharges. Wear protective gloves/protective clothing/eye protection/face protection/hearing protection. Wash hands [and…] thoroughly after handing. Do not touch eyes. Obtain, read and follow all safety instructions before use. Avoid breathing dust/fume/gas/mist/vapors/spray. Use only outdoors or in a well-ventilated area.
Response:
In case of fire: Use water spray, foam or dry powder to extinguish. If on skin (or hair): Take off immediately all contaminated clothing. Rinse affected areas with water [or shower]. If inhaled: Remove person to fresh air and keep comfortable for breathing. Get medical help if you feel unwell. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical help. If exposed or concerned, Get medical advice.
Storage:
Store in a well-ventilated place. Keep cool. Store locked up. Keep container tightly closed.
Disposal:
Dispose of contents/container in accordance with local/regional/national/international regulations.

Other hazards which do not result in classification: /

Section 3 COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	Concentration
Tetrahydrofuran	109-99-9	99.915%

Section 4 FIRST AID MEASURES

Description of necessary first aid measures

If inhaled: Quickly leave and move to a place with fresh air. Keep the airway unobstructed. If breathing is difficult, give oxygen. If breathing stops, give artificial respiration immediately. Consult a physician.

In case of skin contact: Remove contaminated clothing and rinse with plenty of running water.

In case of eye contact: Rinse thoroughly with plenty of running water for at least 15 minutes and consult a physician.

If ingestion: Rinse mouth with water. Consult a physician.

Most important symptoms/effects, acute and delayed: /

Indication of immediate medical attention and special treatment needed, if necessary: /

Section 5 FIREFIGHTING MEASURES

Suitable extinguishing media: Use dry powder, foam, water spray, etc.

Special hazards arising from the chemical: Highly flammable liquid. Its steam can form an explosive mixture with air. It can explode when exposed to high heat or open flame and release toxic gas.

Special protective actions for fire-fighters: Firefighters must wear air breathing apparatus, fire-fighting suits and protective gloves to extinguish in the upwind direction. Whenever possible, remove the container from the fire to open space and use spray water to cool unopened containers.

Section 6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: It is recommended that emergency personnel wear protective masks and fire protective overalls. Do not touch the spill directly.

Environmental precautions: Isolate contaminated areas and restrict access.

Methods and materials for containment and cleaning up: Small amount of leakage: adsorption with sand or other inert materials. Do not allow products to enter restricted areas such as sewers. A large amount of leakage: building a dike or digging a pit to contain. Transfer to a tank truck or special collector with an explosion-proof pump and transport to a waste disposal site for disposal.

Section 7 HANDLING AND STORAGE

Precautions for safe handling: There should be sufficient local exhaust in workplace. Operators should be trained and strictly follow the operating procedures. Operators are advised to wear protective masks, anti-static protective clothing and rubber gloves. Operators should load and unload lightly during handling to prevent damage to the package. There should be leakage treatment equipment in workplace. There may be harmful residues in empty containers.

Conditions for safe storage, including any incompatibilities: Store in a cool, dry, well-ventilated warehouse. Keep away from fire and heat. Protect from direct sunlight. The package should be sealed and not exposed to moisture. It should be stored separately from oxidants, flammable materials, etc., and should not be mixed. The storage area should be provided with suitable materials to contain spills.

Section 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters:

Source	Material name	TWA	STEL
China Occupational Exposure Limits for Hazardous Agents in the Workplace	Tetrahydrofuran	300 mg/m³	/

Appropriate engineering controls: Close strictly and provide sufficient local exhaust.

Individual protection measures

Eye/face protection: Wear a protective mask.

Skin protection: Wear anti-static protective clothing.

Respiratory protection: Air respirators should be worn during emergency rescue or evacuation.

Thermal hazards: /

Section 9 PHYSICAL AND CHEMICAL PROPERTIES

Physical state	Transparent liquid.
Colour	Colorless.
Odour	/
Melting point/freezing point	-108.5℃.
Boiling point or initial boiling point and boiling range	66℃.
Flammability	Flammable liquid.
Lower and upper explosion limit/flammability limit	2%-11.8%.
Flash point	≤18.0℃.
Auto-ignition temperature	321℃.
Decomposition temperature	/
pH	/
Kinematic viscosity	0.5mPa·s (20℃).
Solubility	Miscible with water.
Partition coefficient: n-octanol/water (log value)	/
Vapour pressure	19.3kPa (20℃).
Density and/or relative density	0.89.
Relative vapour density	2.5.
Particle characteristics	/

Section 10 STABILITY AND REACTIVITY

Reactivity: /

Chemical stability: This material is stable in normal temperature.

Possibility of hazardous reactions: The substance can form explosive peroxides. Reacts violently with strong oxidants, strong bases and some metal halides. This generates fire and explosion hazard. Attacks some forms of plastic, rubber and coatings.

Conditions to avoid: Spark, static electricity and high temperature.

Incompatible materials: Flammable materials and oxidizers.

Hazardous decomposition products: Oxycarbides.

Section 11 TOXICOLOGICAL INFORMATION

Information on the likely routes of exposure: Ingestion (swallowing), skin/eye exposure and inhalation.
Symptoms related to the physical, chemical and toxicological characteristics: /
Acute health effects:
Ingestion can cause symptoms such as nausea, vomiting and abdominal pain.
Skin contact can cause redness and irritation.
Inhalation can cause cough, throat irritation.
Eyes contact can cause redness and irritation.
Chronic health effects: Repeated or prolonged contact with skin may cause dermatitis. The substance may have effects on the liver and kidneys. This may result in impaired functions. This substance is possibly carcinogenic to humans.
Numerical measures of toxicity (such as acute toxicity estimates):
LD50(Dermal, rat): >2000 mg/kg
LC50(Inhalation, rat): 45 mg/l 4h

Section 12 ECOLOGICAL INFORMATION

Ecotoxicity (aquatic and terrestrial, where available):

Endpoint	Test Duration (hr)	Species	Value
LC50	96	Fish	2160mg/l
NOEC(ECx)	24	Fish	≥5mg/l

Persistence and degradability: Low.
Bioaccumulative potential: Low (LogKOW=0.46).
Mobility in soil: Low (KOC=4.881).
Other adverse effects: /

Section 13 DISPOSAL CONSIDERATIONS

Disposal methods: Dispose this product by safe burial. Damaged containers are prohibited from being reused and should be buried in the prescribed place.

Section 14 TRANSPORT INFORMATION

UN number: 2056.
UN proper shipping name: TETRAHYDROFURAN.
Transport hazard class(es): 3
Packing group, if applicable: II.
Environmental hazards: /
Special precautions for user: /
Transport in bulk according to IMO instruments: /

Section 15 REGULATORY INFORMATION

Regulations: This safety data sheet is in compliance with the following national standards: GB/T 16483-2008, GB 13690-2009, GB 18218-2018, GB 15258-2009, GB 6944-2012, GB 190-2009, GB/T 191-2008, GB 12268-2012, GB/T 15098-2008, GBZ 2.1-2019, GBZ 2.2-2007 as well as the following regulations: Railway Dangerous Goods Transport Administrative Regulation, Dangerous Chemicals Safety Administrative Regulation.

Section 16 OTHER INFORMATION

References	UN Recommendations on the Transport of Dangerous Goods Model Regulations UN Globally Harmonized System of Classification and Labelling of Chemicals
Form Date	25-May-2022

Note 1: When products contain two or more hazardous substances, Safety Data Sheets should be prepared based on the risk of the mixture.

Note 2: Manufacturer/supplier should ensure the correctness of the information contained in the safety data sheets, and updated in a timely manner.

Note 3: As a result of product features without the existence of certain information or no data available (such as boiling point does not exist for the solid) in the table with "/" logo.